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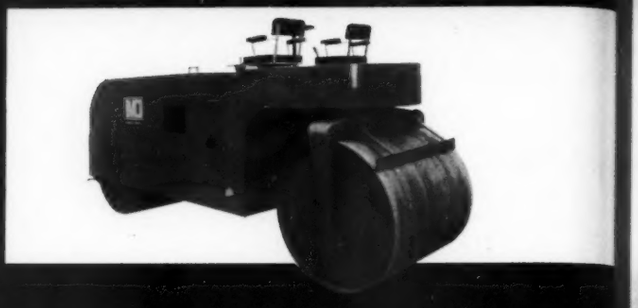
94 **New Method Tried on Navy Air Base** — concrete pumped to spreader

ONTRACTORS and ENGINEERS

GAZINE OF MODERN CONSTRUCTION FEBRUARY 1960

BMCO's new 8-12 ton tandem... *deliberately designed with roadbuilding in mind!*



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For more facts, use Request Card at page 18 and circle No. 251

CONTRACTORS and ENGINEERS

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Hot-mix for the Natchez Trace. Page 10

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COVER:

Snow is about all that's needed to make Squaw Valley, Calif., ready for the Winter Olympics this month. The 224×300-foot ice arena, with its unique cable-suspended roof acting as two separate structures, dominates the valley and the construction job itself.

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An index of articles published in *CONTRACTORS AND ENGINEERS* during 1959 is available on request.

Editorial

Construction pays off

The title for this editorial has nothing to do with payolas. There may be such shenanigans in the construction industry, but, if so, nobody has yet raised the issue nationally. We were thinking particularly of that profitable toll structure, the Delaware Memorial Bridge, which cost $46 million to build and was opened in 1951. The bridge spans the Delaware River from New Jersey to Delaware, a short distance below Wilmington. It also connects with the southern end of the New Jersey Turnpike.

When the span was opened to the public, the toll for passenger cars was set at 75 cents. This was 10 cents cheaper than the existing toll on the New Castle-Pennsville ferry, at that time one of the great traffic bottlenecks of the East. The bridge, of course, put the ferry out of business. The Delaware Interstate Highway Division soon found that the bridge was attracting so much traffic that the 75-cent toll was more than sufficient to retire its bonds by 1978. Accordingly, the toll was cut to 50 cents, but even at this reduced rate it was estimated that the bridge would be paid for in another five years.

If the toll-free bridge were turned over to Delaware, the state would be saddled with about a $1 million annual maintenance cost that is now taken care of by tolls. Consequently, the Interstate Highway Division cut the toll charge in half, in the expectation that a 25-cent fee will delay the change-over from toll to free bridge until the bonds are retired as originally scheduled. So the state hopes that traffic will not get too heavy for the bridge to retain its toll status for another 18 years.

Not all toll facilities are so fortunately located with respect to heavy traffic, and a subsequent fast, sure payoff on the investment. But even those facilities that may not be meeting their full financial obligations have added a tangible asset to the economic worth of the country. Such worth cannot be measured in dollars and cents.

The $46 million that was spent to span the Delaware is saving motorists many times that amount in gas, oil, and engine wear, to say nothing of the hours that would have been consumed in crawling along approach highways to reach the antiquated ferry. Practically all construction projects, even some of those which were criticized by the Administration in last year's federal public-works bill, are useful to some area of the country. Such was the explanation, too, that was offered by several members of Congress in defense of their vote overriding the Presidential veto.

When the public in large numbers can avail itself of such facilities as a new bridge, an improved highway, a modern school or hospital, or can feel directly or indirectly the beneficial effect of a dam, a levee, a deepened channel or harbor, there is no argument that the money spent on such a project is wasted. On the contrary, the public is more likely to be skeptical about expenditures for moon probes and space rockets, even though such spending is considered justifiable for the national defense.

It is construction, such as the Niagara power project, to improve the living conditions of the people that contributes to the country's growth. All through this winter, over 6,000 workers are toiling at Niagara under severe weather conditions in order to meet work schedules. If they are successful in meeting the deadline, and the job is completed a year from now, a 1,950,000-kw generating plant will be in operation. This new available power, distributed over a wide area, will be another testimonial to the creed that wise construction pays off.

CONTRACTORS and ENGINE

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Acceptance under Section 34.64 P. L. & R. Authorized at Lancaster, Pa. Vol. 57, No. 2. $5 a year, $1 a copy in the United States and Canada. $8 a year in other countries. Issued monthly.

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Political price

The end of the steel strike brought the steel user relief from the threat of growing shortages but not the hoped-for protection from another price rise. Looking back over what, at times, seemed to be the most serious labor-management struggle since the days of the New Deal, it appears that the noninflationary settlement that the industry sought so determinedly was never in the cards. The money for a wage rise that the industry could absorb was to have come from production economies achieved by abolishing outdated work rules and otherwise cutting down manpower waste. But when the union succeeded in translating this into a threat to the union itself and, consequently, to job security, it gained the power to carry on a long strike.

Before it was stopped by Taft-Hartley, the strike had run for 116 days and had cost more than $6 billion in lost production and wages.

When a settlement was arrived at—some eight months after negotiations began—the best that could be said about the terms was that "they appear less inflationary, at least, than any which the steel industry has actually experienced since the end of World War II." In a television interview on the night of the settlement, Roger Blough, chairman of U. S. Steel, further said the average rise in labor costs over the life of the new contract would be 3½ to 3¾ per cent a year. He contrasted this with an 8 per cent per year average since 1940.

Will this improvement over previous contracts be enough to keep steel prices from increasing again during the life of the new agreement? Every new wage contract since 1946 has been followed by a rise in the price of steel. The total post-war increase has been $67.19 a ton.

While the major producers have said they intend to hold this price for the present, some smaller producers, it is thought, will have to make up the added labor costs in the near future, perhaps within 2 or 3 months. The large companies have said that the need for a price rise would depend partly on workers' cooperation in trimming production costs. The industry's plans to turn out 70 million tons of raw steel or about 80 million tons of finished products in the first half of the year will tend to lower the labor cost per unit. Finally, the steel producers may have made—as reported—an unwritten commitment to Vice President Nixon and Labor Secretary Mitchell to avoid a price increase in an election year.

While the intervention of these administration figures ended the conflict, it was their political rather than economic arguments that prevailed. The steel companies were reminded that a resumption of the struggle would necessarily bring proposals for restrictive legislation from both parties. They were persuaded that a later settlement under government compulsion could hardly be better than the one to which they were being asked to agree.

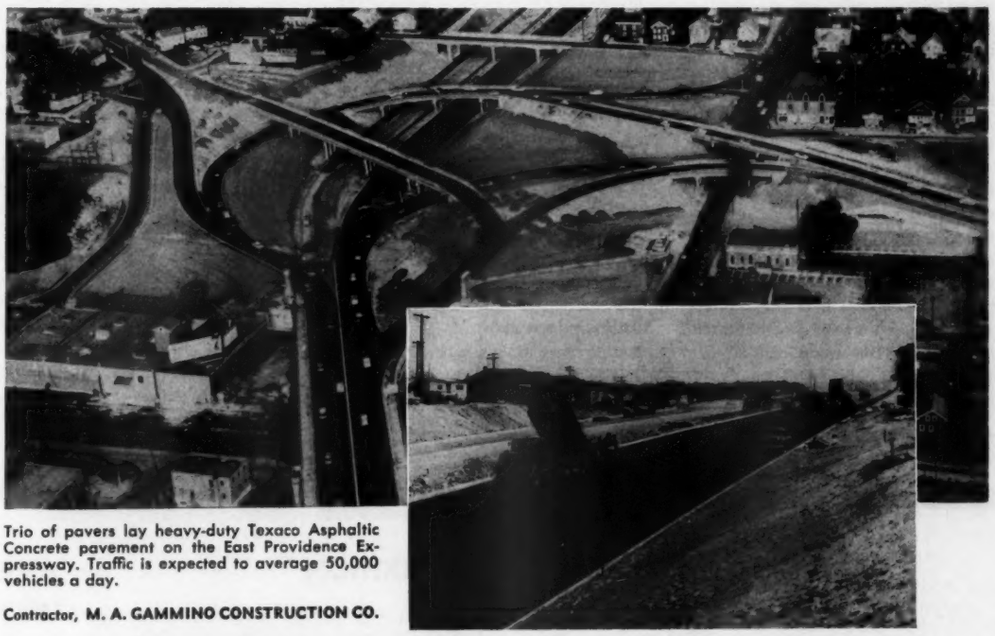
That settlement left the important economic questions that had precipitated the long struggle unresolved.

Steel's Wage-Price Spiral

Year	Strike Length	Minimum Pay	Hourly Increase	Steel Price Increase Per Ton
1946	.....(26 Days)	.965	.185	5.00
1947	.....	1.09	.16*	5.00
1948	.....	1.185	.13*	9.34
1950	.....	1.36	.16*	5.50
1952	.....(59 Days)	1.435	.16*	5.00
1953	.....	1.52	.085	4.00
1954	.....	1.57	.05	3.00
1955	.....(12 Hours)	1.685	.15*	7.35
1956	.....(34 Days)	1.82	.105*	8.50
1957	.....	1.89	.21	6.00
1958	.....	1.96	.07	4.50
1959	.....(116 Days)	—	—	—
1960	.....	2.03	.07	—

*Hourly increase spread over the various job classifications, and not exactly matched in the minimum pay rates.

†Figures do not include a total of 17 cents an hour that workers received between 1956 and 1959 in cost-of-living increases under the last contract signed in 1956. The cost-of-living increases brought the 1958 base pay to $2.13 an hour.



Trio of pavers lay heavy-duty Texaco Asphaltic Concrete pavement on the East Providence Expressway. Traffic is expected to average 50,000 vehicles a day.

Contractor, M. A. GAMMINO CONSTRUCTION CO.

Asphalt-paved expressways expedite Providence traffic

Steady progress is being made toward solving the traffic problem of Providence, R. I., by the construction of a comprehensive system of modern expressways.

Texaco Asphalt plays two important roles in the resilient, heavy-duty pavement constructed on two of these busy traffic arteries. Both the East Providence Expressway and the East Shore Expressway have a 3-inch surface of hot-mix Texaco Asphaltic Concrete. The upper 2½ inches of the base is Texaco Asphalt (Penetration) Macadam, laid on 5½ inches of sand-filled macadam. Underneath is a 12-inch gravel subbase.

This highly durable type of Texaco Asphalt construction, with its low upkeep cost, and its skid-resistant, glare-free surface, has a substantially lower first cost than rigid paving designed for the same traffic. When used on primary highways, particularly in the construction of Interstate Highways, the Providence expressway type of Asphalt pavement makes possible more miles of paved roads for the taxpayer's dollars.

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For more facts, use Request Card at page 18 and circle No. 252

Surveying Washington

by E. E. Halmos, Jr.

Budget holds huge proposals for 1961 construction

Before considering details on construction-spending phases of the President's budget, remember that the budget is a proposal of what the various agencies want or must have to carry on their work. It does not necessarily have anything to do with the final totals of government spending.

Proposals for construction are huge, and confirm predictions of a heavy federal assist to the industry. Total spending for federal work in all areas would come out to the sum of $6.945 billion.

Most of the fiscal year 1961 reduction is accounted for in two areas: a drop of about $300 million for highways, as a result of strictures on the Highway Trust Fund; and about the same amount in military construction, reflecting completion of major military bases and a shift away from air bases and major troop installations toward missiles and mobile forces.

Here's how the major construction requests break down:

Highways, $2.7 billion, down $300 million; military and national security, $1.4 billion, down $279 million; Federal Aviation Agency, $190 million, up $69.7 million; Army civil works, $770 million, up $77 million; Bureau of Reclamation, $241 million, up $61 million; Veterans Administration, $75 million, up $15 million; General Services Administration, $230 million, up $82 million; Department of Health, Education and Welfare, $23 million, down $12 million; and the Post Office, $90.5 million, up $29 million.

Predict good construction year

This should be a very good year for construction. AGC predicts a $76 billion total business for 1960, including an estimated $20 billion for maintenance and repair. Right behind the AGC is the Department of Commerce, with an estimate of $55 billion. Nearly every other prediction of general business follows this line, with a construction increase, not counting maintenance and repair, running between $1 billion and $2 billion.

The only exception is housing. Home Builders, in the midst of its annual campaign for easier credit, predicts a drop from last year's 1,350,000 units to 1,200,000. This estimate is backed by several authorities. But others, including the National Association of Real Estate Boards, think housing will hold its own, dollarwise at least, because of the rapid rate of formation of new families and the demand for more gadgetry and more expensive units.

For contractors, the forecasts generally agree on three points: the increases this year will come from a marked expansion of industrial construction; there will be a possible increase in public construction, especially schools; and an increase in rental housing, partially sparked by tight credit for individual housing units, is expected.

School work to be high; little action on federal aid

There will be little action on federal aid to schools, including construction aid, because it will inevitably bring up the sore question of integration. Party leaders would prefer to soft-pedal the whole affair this session, rather than risk interparty battling. But there is ample evidence that the bills will be forced out for floor consideration, anyway.

Actually, the chance for more school construction looks good this year, whether there is any added federal aid or not. The Investment Bankers Association, for instance, sees strong support by voters of bond issues for school purposes continuing to the end of the current year.

Byrd-Mueller letters on federal-aid highway work

Not much attention has been paid to a very important exchange of letters between the Senate's powerful Harry F. Byrd (D., Va.) and Secretary of Commerce Frederick H. Mueller.

Byrd, who released the two letters to the press, drove home his long-standing argument that the highway program must not be allowed to overrun the pay-as-you-go policies that he was instrumental in forcing into the Highway Act of 1956. One way to do this, he said, was to keep a sharp watch on land acquisition, "frills" and ultra-expensive design and control of bids. In these comments, he echoed the criticisms issued by the Comptroller General in a report on the highway program.

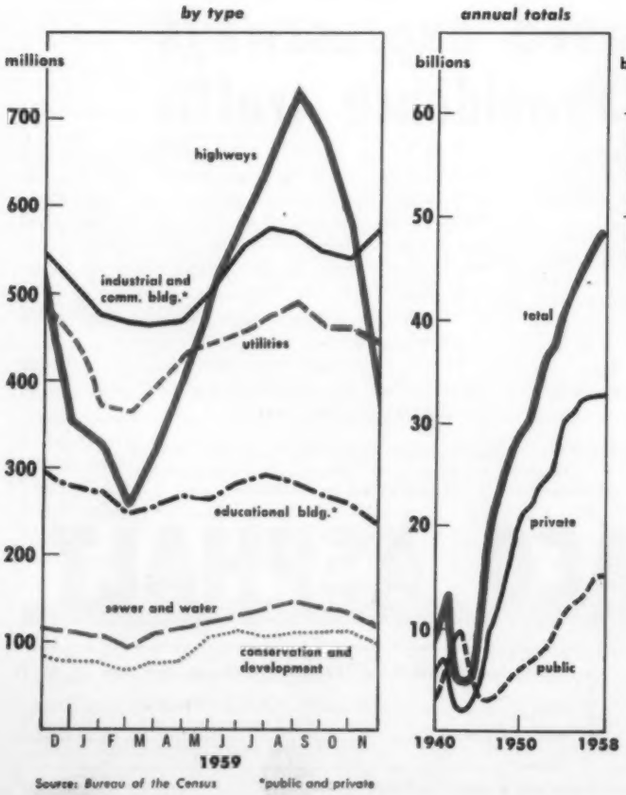
Mueller, in a reply also made public, agreed almost point-for-point with Byrd's comments and promised that his department would continue to exercise vigilance to hold interstate-program costs down.

It is significant that the Administration agrees with one of the leading Democratic members of Congress on the need to forestall any more sudden Congressional urges to speed highway money at a rate faster than it comes into the trust fund.

Industry Trends

DOLLAR VALUE OF NEW CONSTRUCTION

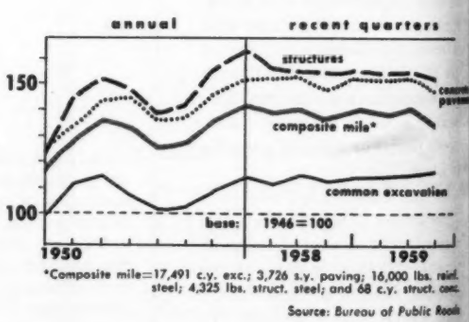
Recent Monthly Trends



Source: Bureau of the Census *public and private

AVERAGE BID PRICES

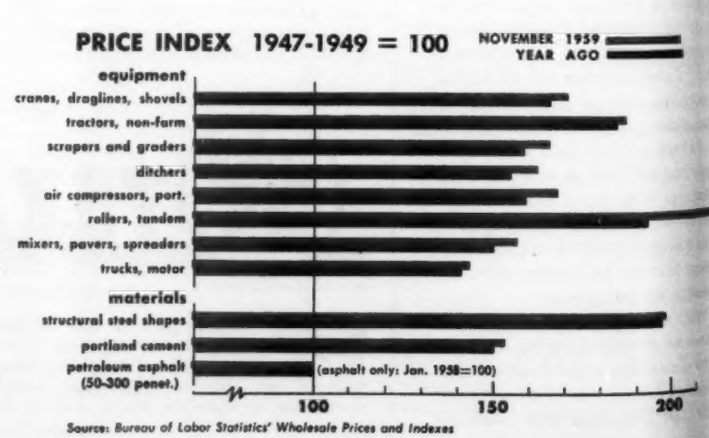
Federal Aid Highway Construction



*Composite mile=17,491 c.y. exc.; 3,726 s.y. paving; 16,000 lbs. reinf. steel; 4,325 lbs. struct. steel; and 68 c.y. struct. conc.

Source: Bureau of Public Roads

PRICE INDEX 1947-1949 = 100



Source: Bureau of Labor Statistics' Wholesale Prices and Indexes

Labor Department, FBI talks held on labor relations

If current talks between the Department of Labor and the Federal Bureau of Investigation bear any fruit, you may find the FBI very interested in labor relations. Where the G-men could come in is on the question of labor corruption under the new labor law that was passed at the last Congressional session. Labor department chiefs have indicated they have no particular wish to build up any new investigative force and would be glad to take advantage of the law's provision that the Secretary of Labor may "make arrangements" with other federal and state agencies to aid in enforcement of the legislation.

You can look for strong protest from labor organizations if such an agreement is made. They would prefer to have the labor department do the gumshoeing.

Tax may be put on rigs brought into Washington

If local contractors are successful in getting legislation imposing a 2 per cent tax on construction machinery purchased elsewhere and brought into the District of Columbia, they will be following the example of some 33 states. The tax would apply only to equipment bought originally in one of the 15 states that do not have such sales taxes.

The move for the tax is a part of the local contractors' current campaign to either shut outside contractors out of the local market or force them to bid on what the local men consider to be equal terms.

Defense highway overpasses prove too low for missiles

There never was any doubt that, if the Department of Defense wanted the change, the vertical clearance of certain highway overpasses would be raised. You'll recall that the full title of the Highway Act of 1956 referred to "defense highways." And the defense department, thinking about moving its huge Atlas and Titan missiles by over-the-road carriers, found that the now standard 14-foot clearance is not enough; it wants 17 feet.

Two problems came up at once. Many bridges have already been built, and the expense of raising all of them would be enormous. The first problem can be solved by selecting only certain bridges on certain roads already built, then specifying all future ones at the higher clearance. The second problem—payment of the added costs—is another matter; the Highway Trust Fund contains no money for this purpose.

For more facts, circle No. 253→

Check results of Corps' rule on paying for job plans

Nobody else has made a move in the same direction yet, but you can bet that other government construction agencies are watching closely to see what results the U. S. Army Corps of Engineers gets from its present program of charging contractors for half-scale sets of plans for new projects.

Contractors have objected bitterly to the scheme. As you may know, the Corps requires every prospective bidder to buy a set of half-scale plans; then the would-be bidder can buy full-scale sets at 50 cents per sheet. Contractors are most upset by the requirement for purchase of the sets of plans; they know well that the half-scale sets cannot be used for accurate takeoffs for quick bidding estimates.

Big advantages shown in gas engines for army

Contractors will be interested in a new family of small air-cooled industrial-type gasoline engines, ranging from ½ to 20 horsepower, now being supplied to Army troops. Over 20,000 such engines have been manufactured for the Army by Continental Motors Corp. and are being used to supply portable power.

The new engines are the result of a 5-year program by the U. S. Army Corps of Engineers, seeking to standardize and replace the 78-odd sizes and types now in use or used during World War II. So far, they have been manufactured exclusively for military use, along with about 100 to 200 parts or assemblies needed for maintenance, as opposed to 23,000 parts that had to be kept in stock during World War II. Normal service life is set at 1,500 hours without overhaul.

Whether some version of these engines will be made available commercially has not been decided.

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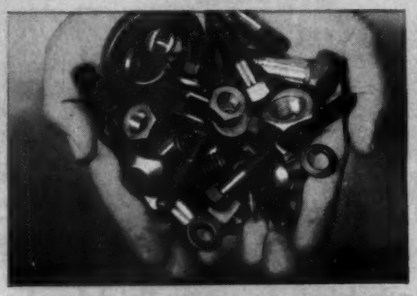

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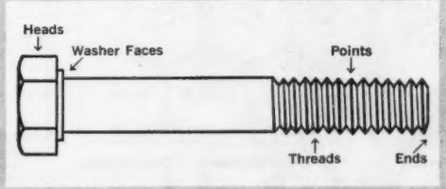
Hardness Rockwell Rating	RC 0-28	RC 19-32	RC 28-36	RC 30-38

If you need tougher, stronger hardware—get Cat all-purpose bolts and nuts. You can count on them to do a better job longer because they're stronger and harder than others.



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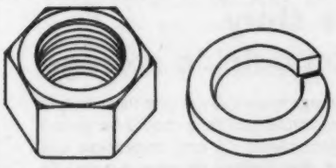

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SERVICE TIP: Get your free copy of Caterpillar's bolts and nuts reference booklet at your Caterpillar Dealer today. It has the sizes, threads and part numbers listed for quick, easy ordering. Before buying any hardware, check Cat prices first.

CATERPILLAR

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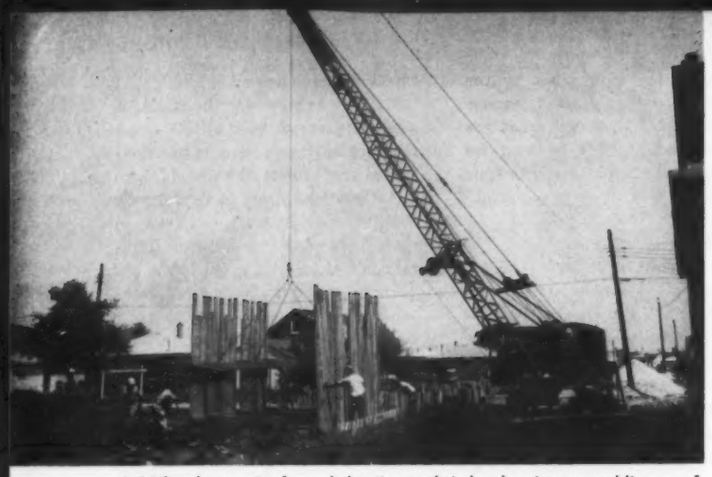
Shore a trench with this new method



A 16-foot-long unit of wood sheeting and timber bracing, resembling a cofferdam with two sides, is lowered into position in a sewer trench in Milwaukee by a Koehring 304. Cables hook to a tubular steel framework.

A new method of walling the sides of an open trench saved a Milwaukee contractor both time and money.

The method is particularly adaptable for building concrete box sewers in ground that will temporarily hold a cut up to 14 feet. Developed by U. S. Sewer, Division of The Druml Co., the system takes the work out of the trench and puts it on the bank.

Working with ease and safety on the open ground, men assemble the wood sheeting and timber bracing to form the completed section. The 16-foot-long section resembles a cofferdam with only two walls. After being assembled, the section is placed in the trench by crane.

Steel frame holds bracing

The key to building the cofferdam is a tubular steel framework. It holds the three tiers of timber bracing in place while the wood sheeting is being nailed to two sides. The frame also serves as a lifting rack when the cofferdam is being placed in the trench.

This system replaces the old method of erecting the shoring in the confines of the trench. With the new system, the work goes much faster and is less hazardous; men work on the open ground conveniently and safely.

System is patented

Oscar Druml, the inventor of the system, has a patent pending on both the tubular frame and the method of shoring. He hopes to sell the idea to a scaffold manufacturer who will make the device available to contractors throughout the country.

The construction firm put its method to good use while building a 5½×11-foot box sewer for the city of Milwaukee. The contract called for the construction of 2,636 feet of the main storm sewer located on West Courtland Avenue in the northern part of the city.

Excavation of the trench was the first step in the construction. A 1½-yard backhoe cut out the 15-foot-wide trench to depths averaging 13 feet. Generally, the clay material held its vertical banks long enough for crews to get the cofferdam into the trench.

While the trench was being excavated, a small crew of men assisted by a crane were putting the cofferdam unit together. After the steel frame was erected, the longitudinal 6×6 timber bracing was set in place. These members were held by U-shaped brackets welded to the frame. Wood cleats were used to transverse 8×8 timbers were set position. Finally, the 2×6 hardw planks were nailed to two sides the bracing. The completed

LUBE LOGIC

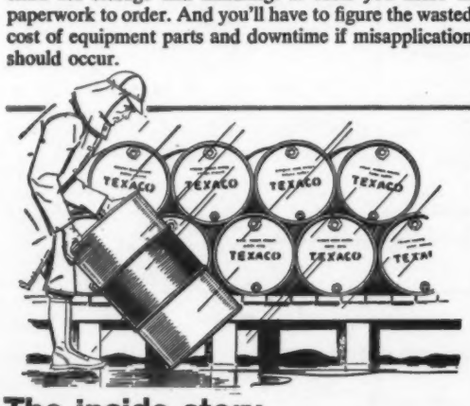
Six tips to

How high is your hidden cost of maintenance?

You may not realize how many extra maintenance dollars you spend when you keep many different lubricants on hand. (Six are often all you need to cover all major maintenance.) You pay extra for inventory. You pay extra for storage and handling. It costs you more in paperwork to order. And you'll have to figure the wasted cost of equipment parts and downtime if misapplication should occur.

The Texaco Lubrication Plan helps you reduce eliminate these hidden costs. That's because it p the minimum number of *proven* multi-purpose cial lubricants, tailored to your job requirement

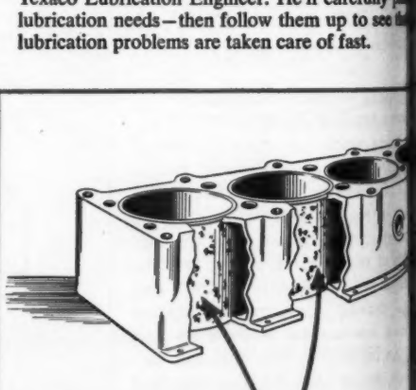
You'll do yourself a favor when you check Texaco Lubrication Engineer. He'll carefully pl lubrication needs—then follow them up to see th lubrication problems are taken care of fast.



The inside story on outside storage

You're short-changing yourself if you skip these simple precautions: drums stored outdoors should be placed on their sides. When stored on end, expansion and contraction through temperature changes can suck in rain water that collects on top of the drum.

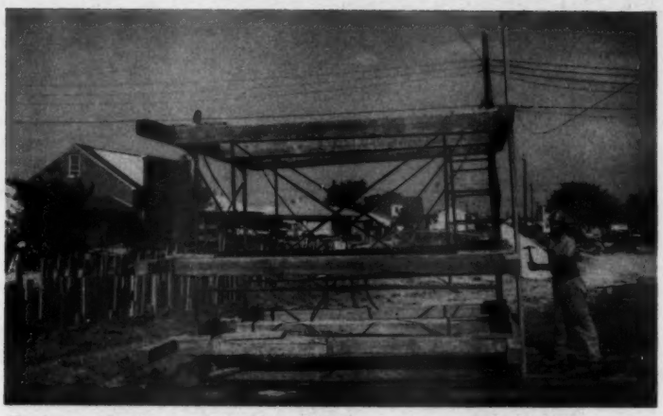
Want to warm up lubricants that have become stiff from cold? *Don't* heat them with an open flame. You might melt the sealing compounds, and the drum will leak. You might also damage the product with too much heat in one spot. Put the drum indoors for a while before using.



Here's how to handle cylinder cavitation erosi

High pressure cooling systems in use in most charged diesels are subject to coolant aeration. aeration can cause cavitation, leading to serious der liner corrosion-erosion, unless a rust preve added to the water. A good antifreeze (like T PT antifreeze) will do the job in winter—but in mer a 1% to 2% solution of Texaco Soluble will do a fine job. (Remember to flush out befo add antifreeze again.)

Inside wall forms consist of 104-foot-long sections that are pushed along the trench on steel casters nailed to the bottoms. Note the Sisalkraft paper lining the wood sheeting that forms an outside wall.



The bracing-forming unit is built outside the trench on a tubular steel framework; the timber is held in position by means of steel brackets welded to the frame. After bracing is set, the hardwood sheeting is nailed to the two outer walls.

dam unit, with either 14 or 16-foot-high sheeting, measured approximately 13 feet wide and 16 feet long.

Placing the unit in the trench followed closely behind the excavation. Making a 4-point lift on the steel frame, a Koehring 304 crane picked up the cofferdam and placed it in the trench. It was set up against the previously placed sheeting and carefully aligned. Aligning the cofferdam by instrument was necessary because the wood sheeting served as the outside wall form for the box culvert.

After the cofferdam was in position, the area between the trench walls and the sheeting was backfilled. The trench was then trimmed to grade, and a 5-inch layer of stone was placed by clam to line the bottom of the trench.

Culvert poured in two sections

The box culvert was poured in two sections. Concrete for the 16-inch bottom slab, with 6-inch curbs at the base of the walls, was placed first. The 12-inch walls and 15-inch deck slab were placed monolithically to complete the box culvert.

Forming the outside edge of the bottom slab, as well as the outside of the walls, was done with the wood sheeting. A layer of Sisalkraft paper separated the concrete from the sheeting.

Wall forms on roller skates

The method of forming the inside walls cut many hours of carpenter labor from the cost of construction. To reduce the handling of individual form units, the wall forms were built in 104-foot-long sections. The long forms were mounted on casters to make them easy to handle. The steel wheels allowed the men to push the forms forward as the work progressed.

The formwork for the top slab rested on two rows of adjustable steel shores. The shores supported transverse 4×4's, which carried 2×6 framing topped with plywood.

Edward Goronja superintended the job for the contractor. Supervision of the construction for the city of Milwaukee was done by supervising engineer Marvin Schroeder and resident engineer Robert W. Kohen.

THE END

s to cut maintenance costs

OIL GAUGES SPEAK A LANGUAGE ALL THEIR OWN

Look to your oil gauge pressure for clues to a variety of potential engine ailments. For example:

LOW OR NONE
1. Oil pump pickup stuck high.

LOW
1. Clogged oil pump screen.
2. Excessive main, con-rod, camshaft or rocker-arm bearing clearances.
3. Clogged full-low filter, if by-pass isn't working.
4. Excessive dilution of oil with fuel.
5. Enlarged squirt holes.
6. Loose connections or cracks in oil line.

LOW OR ERRATIC
1. Faulty oil pump.
2. Restriction in oil pan, or oil too viscous to keep oil pump intake supplied.

LOW OR HIGH
1. Faulty gauge.
2. Ineffective oil cooler depending on type, may keep oil too cold or provide insufficient cooling.

HIGH
1. Oil with viscosity too high for climate.
2. Sludge and contamination in the oil.
3. Clogged oil passages on the pressure side.

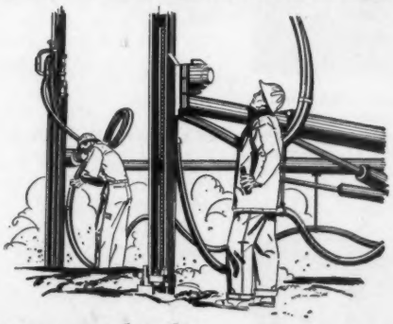
HIGH, LOW OR ERRATIC
1. Improper setting or failure of pressure relief valve.

ERRATIC, LOW, THEN NONE
1. Crankcase oil level just at or below oil pump pickup.

NO MOVEMENT OR DELAYED ACTION
1. Clogged line to gauge.

Don't let engines foul up!

If the fuel injector on a diesel drifts off or "dribbles," incompletely burned fuel will contaminate the crankcase. The result will be plenty of smoke—and probably engine trouble. The injector should be fixed immediately—but if it can't be, start shortening drain periods to remove the damaging oil-fuel mixture. Also, use an oil with full detergent and dispersion properties to keep other undesirable products out of the engine.



New product for rock drill couplings

Actually, it's an old friend, Marfak Heavy Duty #2, in a new application. According to the raves from customers who've tried it, the lubricant works better on rock drill couplings than anything they've ever used.

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Contractors are working under a fast schedule for the paving of 150 miles of the Natchez Trace between Natchez, Miss., and Nashville, Tenn. On a stretch near Jackson, Miss., Roadways, Inc., Washington, D. C., works scrapers in two spreads—each composed of three scrapers and a pusher. This Cat DW21 is barreling across a double-box bridge on its return to a cut area.

A DW21 is assisted by a Cat D9 in a cut. The material is a loamy clay typical of the area. Note the gradual 4 to 1 slope that makes the highway pleasing to the eye. In barrow areas, Roadways, Inc., is stripping topsoil, excavating barrow, and then storing the topsoil to keep the sections unmarred. The entire construction job is being done to make the roadway seem a part of the countryside.

Blacktop is being rolled out on a 24-mile stretch being paved by Warren Brothers Roads Co., Cambridge, Mass. Two pavers are putting down the hot-mix, the Barber-Greene working slightly behind the Blaw-Knox rubber-tire rig to make the hot center-line joint between the 11-foot lanes. A Chevrolet 6400 truck with Heil body dumps into the B-K paver.

The Natchez Trace—a road built for beauty

Contractor's schedules on grading and blacktop jobs are the fastest ever set up for work on this parkway

by BILL ALLEN, field editor

There's a fabulous road being built from Natchez, Miss., to Nashville, Tenn.

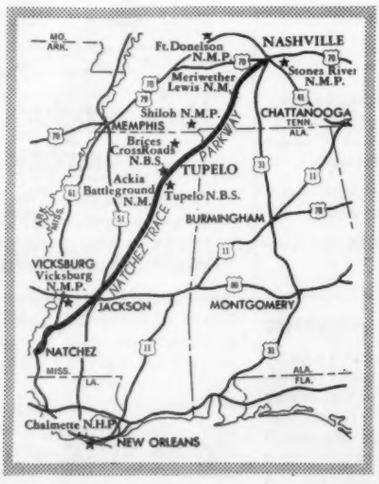
Unlike most roads, it is not primarily designed for getting people the 450 miles from Natchez to Nashville but for having the people enjoy the ride.

It is a road that is being built for beauty. It seeks out deep pine forests, silent cypress swamps, and stop at loess hills. It is a highway that passes beside the sites of old Indian settlements, historical landmarks, and other areas famed in the history of the old South.

It is a highway that follows the approximate route of trails first carved out by the Indians and later improved by the white settlers. In those days the route was known as the Natchez Trace.

The new highway and its adjoining parklands is called the Natchez Trace Parkway. The long road is now being built on the fastest schedule set up in the 24-year history of its planning and construction. At the present time 150 miles of the 2-lane highway have been substantially completed, and 100 additional miles are in various stages of construction.

A road built for beauty makes certain demands unknown in conventional road building. The highway, for example, is designed to blend in with the landscape rather than cut through it. Backslopes sweep gracefully up from the road on slopes that are fre-



Behind the pavers, a Galion 8-ton tandem roller makes the knockdown roll, and a Buffalo-Springfield 10-ton tandem follows. The gravel shoulders will be topped with black dirt and then seeded to provide a grass shoulder.

Pioneers beginning to explore the southern part of the United States found a network of beaten paths—some made by Indians, some made by wild animals in search of food or salt licks—that they called traces, a word that in old French suggests the trails' origin as a line of footprints or animal tracks.

One of the most famous—really several trails joined together—is the Natchez Trace that led from the present-day Natchez, Miss., to Nashville, Tenn., and probably linked together several Indian nations. White settlers used the trace; a post road between Natchez and Nashville was established by Congress in 1800.

The Natchez Trace has been a military road. In 1803, when it appeared that France might refuse to surrender Louisiana, President Jefferson ordered Tennessee militia to Natchez. Andrew Jackson refused to disband Tennessee militia units in the war with England and took his men home over the trace. Two years later, veterans of the Battle of New Orleans marched home over the road.

But with widespread use of steamboat travel early in the 19th century, some sections of the road were abandoned, others became local roads.

In 1938, an act of Congress created the Natchez Trace Parkway as a unit of the National Park System. When completed, it will run about 450 miles from Natchez to Nashville, following closely the route of the old trace past places of historical interest.

quently as flat as 4 to 1. The top of the cut slope is rounded off, and the sharp angle at the toe is filled in.

The dark surface of the asphalt pavement does not obtrude upon the natural beauty of the countryside. The grass shoulder, stabilized with a gravel base, helps make the road part of the landscape.

Concrete bridges are made less conspicuous by surfaces that are darkened by carbon black. Handrails are built of concrete and held to a minimum height to provide an unobstructed view of the scenery.

Graceful curves

To make the road more pleasing to the eye, special design features are built into the highway. Its center line is laid out on long, graceful reverse curves. There are no long monotonous straight stretches. Curves bending twice in the same direction are always continuous without intervening straight stretches.

Great care is taken to conceal public-utility lines that border or cross the road. Generally, a telephone or power line goes underground to cross the highway. Electric power and other utility lines bordering the parkway are screened by trees. The route is planned to avoid residential areas.

Historian helps locate road

It takes experts from many different fields to plan the final location of the road. A historian picks out the landmarks he would like the road to pass. A naturalist points out the best route from the standpoint of natural beauty. A landscape architect looks at the route from still another viewpoint. Then an engineer looks over the location from the practical standpoint of building a good road at a reasonable cost. To arrive at a route that is suitable to all the experts takes many analyses and many months of planning.

Beautiful but safe

Although the parkway is dedicated to beauty and history, safety features are not neglected in its design. Grade separations at most of the intersections eliminate dangerous cross traffic. Long curves, easy grades, and a minimum sight distance of 1,200 feet

(*Continued on next page*)

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The driver of a Chevrolet 6400 haul truck with Heil body has a scenic tour of a section of the parkway as he makes the run from asphalt plant to the finishing machines on the Warren Brothers stretch. With the plant located at one end of the job, hauls ran as long as 24 miles.

A Cat No. 12 motor grader working for Roadways, Inc., finishes off the graduel 1 backslope. The top of the slope will be rounded off, and the toe will be dished provide curves. This rig was one of two graders that handled this work and maintained the haul roads during work on the parkway.

(Continued from preceding page)

serve to protect the motorist. The speed limit is 50 mph, although the road is actually designed for 70-mph speeds. Commercial traffic is not allowed on the parkway.

To protect the natural beauty of the adjoining land, an average of some 100 acres per mile is acquired for the right-of-way. This generally gives an over-all width of about 825 feet. A much wider right-of-way is acquired at areas of historical or recreational value.

Construction

Although the forces of the National Park Service build the facilities in the recreation areas, the road itself is built under private contract. The Bureau of Public Roads supervises the highway construction, as well as doing much of the design work.

Work was started in 1937, interrupted for six years by World War II, and then resumed in 1947. Since that time, construction has been moving along steadily. During the fiscal year of 1959, $4.2 million was spent on the construction of the road and parkway facilities.

Road builders at work along the newest stretches of the growing parkway have been moving dirt, hauling in base material, rolling out the blacktop, and building drainage structures and bridges.

They have only one complaint—rain. Rain slowed down work in 1958, and again last year. There wasn't much the men could do about it.

Grading

Some contractors were maintaining fairly good production in spite of the frequent showers. Roadways, Inc., Washington, D. C., was doing its darnedest to keep the grading contract on schedule. The company was working a subcontract for La Coste, Inc., Jackson, Miss., on a 14-mile stretch southwest of Jackson.

Here, the route cuts through wooded, gently rolling country. Most of the 1.3 million cubic yards of material to be moved was a loamy clay. About half the material came from borrow areas. Roadways, Inc., has pioneered a high standard of conservation on these borrow pits. Instead of creating the usual bleak craters, it stripped topsoil from sites on rolling hills, flattened the hills, and restored the topsoil so that improved farm and

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Typical of the structures built to eliminate cross traffic is this tee-girder concrete span south of Tupelo, Miss. The surface of the concrete is treated to give it a dull gray color; guardrails of concrete are low and inconspicuous.

grazing land was created adjacent to the parkway.

The contractor generally ran his earthmoving equipment in two spreads. One spread was built around three Cat DW21's with a D9 pushing. The other was built around three Cat DW15's with a D8 pushing. In spite of the bad weather, these six units were able to haul between 8,000 and 10,000 yards in a 10-hour day. Hauls averaged about 2,000 feet.

The material was frequently processed with a disk harrow to help dry it out after showers. Scrapers dropped their loads in long, shallow lifts to expose a maximum of the material to the air.

Considerable care had to be taken in the finishing of the graceful 4 to 1 backslopes. Special stakes were used as slopes were rounded off at the top and filled in at the toe. This work was done by two Cat No. 12 motor graders that also maintained the haul roads.

Asphalt paving

While Roadways, Inc., was building the grade on its contract, Warren Brothers Roads Co., Cambridge, Mass., was rolling out the blacktop on a 24-mile stretch near Mathiston, Miss. It was working under a subcontract from R. G. Foster & Co., Wadley, Ga.

The hot-mix is placed on a primed 8-inch layer of gravel base which in turn rests on an 8 to 18-inch layer of select sandy material. The asphaltic concrete goes down in two lifts—a 1¼-inch binder course and a ¾-inch surface course. For future pavements, these layers will be increased to 1½ inches and 1 inch, respectively.

On the road, a Barber-Greene and a Blaw-Knox paver on rubber teamed up to lay the two 11-foot-wide mats. One worked slightly behind the other to make a hot center-line joint.

Two tandem rollers compacted the hot asphalt. The first roller behind the finishing machines was a Galion 8-ton; the second was a Buffalo-Springfield weighing 10 tons.

Dump trucks hauled the hot-mix from a Warren Brothers portable batch plant located at a railhead at the northern end of the job.

Personnel

The project is directed for the National Park Service, Department of the Interior, by Charles D. Carter, project supervisor, and Malcolm Gardner, superintendent. C. H. Buchanan is the division engineer heading the supervision of the construction for the U. S. Bureau of Public Roads.

Hough McKenzie is job superintendent for Roadways, Inc. E. K. Wilson is superintendent for Warren Brothers.

The highway departments of Tennessee, Alabama, and Mississippi take credit for surveying, paving, and right-of-way acquisition.

Work on the largest acreage construction feature of the parkway is set to start before June. It involves a fixed-steel high-level bridge, almost a mile long, for the crossing of the Tennessee River. The bridge is being designed by Palmer & Baker, Engineers, Inc., Mobile, Ala. THE END

Corps develops giant fabric fuel tank

■ A giant 50,000-gallon collapsible tank for storing military fuels has been developed by the U. S. Army Engineer Research and Development Laboratories at Fort Belvoir, Va.

Fabricated of 2-ply nylon cloth coated with synthetic rubber, the tank measures 64×24 feet and stands approximately 6 feet high when filled to capacity. It can be rolled and packed for transport in a canvas carrying case. It was built for the Army by Goodyear Tire & Rubber Co., Akron, Ohio. The empty tank weighs approximately 2,700 pounds. It is currently undergoing tests at Fort Belvoir.

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Highway data exchan

The Highway Research Board's annual meeting in Washington, D. C., continues to draw capacity attendance of scientists, engineers, and technologists. More than 2,300 delegates participated last month in the HRB's 39th annual gathering at the Sheraton-Park Hotel, January 11 through 15. During the 5-day convention, some 220 research papers and technical reports were presented at 55 separate sessions. For the most part, they covered highway construction, traffic operations, driving safety, and urban studies. The HRB operates under the National Academy of Sciences–National Research Council, and its purpose is the stimulation and correlation of highway research.

At the opening session, chairman Harmer E. Davis stated that the great value of HRB is that it provides a forum where research can be reported, discussed, criticized, or interpreted by all who have a serious and sincere interest therein. The outgoing chairman, who is director of the Institute of Transportation and Traffic Engineering, University of California, mentioned that with some recognizable exceptions, the board does not perform research, and that much research is conducted and reported independent of the board.

One of the few research projects in which HRB is directly engaged is the National Road Test at Ottawa, Ill. The Highway Research Board is conducting this project under the sponsorship of the American Association of State Highway Officials, in behalf of the state highway departments and the U. S. Bureau of Public Roads.

According to Davis, the increasing interest in the work of the board, and the increasing attendance at its meetings, is a symptom of growing recognition of research as an in part of the effort to plan, design, produce systems of transportation cilities and services to meet new ditions. "Many here actually two or even three hats," said D "On the job they may perform designers, or as administrators planners; but they are here be they are also concerned with search."

Pyke Johnson elected

Succeeding Davis as chairman the Board for 1960 is Pyke John of Washington, D. C., a consultant the Automotive Safety Founda Johnson is a former president of

Pyke Johnson, chairman, HRB, for 1960.

foundation and has been a mem of the HRB executive committee more than 30 years. Also elected W. A. Bugge, director of highway Washington State Highway Commi sion, as first vice chairman, and R. Bartlesmeyer, chief highway engi neer, Illinois Division of Highway as second vice chairman.

The HRB's Roy W. Crum distin guished service awards were con ferred on Merlin G. Spangler Ames, Iowa, and Guilford Payson Clair of Rockville, Md., for their con tributions to highway development the United States. Spangler, a pro fessor at Iowa State University, re ceived his award for his research soil and structural engineering in th design of highway structures. Clair, U. S. Bureau of Public Roads was recognized for his research bea ing on the financing of highway con struction and maintenance, an forms and rates of taxation appro priate to support it.

The HRB award for the best tech nical paper delivered at the board last annual meeting went jointly t Charles J. Keere, Charles Pinnel and William R. McCasland, all o the Texas Transportation Institute College Station, Texas. Their paper was a research report on freeway operations.

New uses of products

The problem of dust control dur ing construction operations was dis cussed in a paper by Ernest Zube supervising materials and research engineer, California Division of High ways. In order to study the perform ance and possible economic advan tages of various dust binders, a num ber of test sections were placed in the median strip on a recent highway project. The following dust binders were used: water; diluted asphaltic mixing emulsion; a lignin product; an asphaltic product. Water proved to be the most expensive, and for the most part the least effective.

←For more facts, circle No. 257

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Research Board meets

The design and construction of expoxy-asphalt-concrete pavements were presented in a joint paper by W. C. Simpson, R. L. Griffin, H. J. Sommer, and T. K. Miles, all from the Shell Development Co., Emeryville, Calif. The purpose of the paper is to discuss some of the important aspects of construction with EAC, and to indicate how the mechanical properties of the material may be used in thickness design of expoxy-asphalt-concrete pavements. According to the authors, EAC offers a simultaneous solution to the problems associated with heavy loads, high-temperature blast, and fuel spillage. Such problems are encountered on airfields used by modern military and commercial jet aircraft.

Paving equipment

Some of the more practical aspects of highway paving were discussed in papers that concerned both rigid and flexible-type pavements. One of these, by Morgan J. Kilpatrick, Bureau of Public Roads, analyzed cost vs. mixing time on dual-drum concrete paving. According to the author, the key to high-speed paver performance centers around the ability of the paver operator to run a short skip cycle, the batch-truck driver to dump his batches into the skip on schedule and, to a lesser degree, on the coordination between these and other operations in front of and behind the paver. Many paving contractors can consistently produce portland-cement concrete with controlled mixing time in the range of 35 to 45 seconds, Kilpatrick pointed out.

The adjustment of concrete paving equipment was covered by Warner Harwood, senior highway engineer, Portland Cement Association. While it is not the duty of the resident engineer and inspector to make the adjustments in any piece of equipment, Harwood emphasized, they should be able to direct the contractor's personnel in making them. The purpose of the PCA engineer's paper is to assist them in this important duty. Harwood outlined various machines in general use for finishing concrete pavements and described the method of placing them in proper adjustment. Not all types of equipment are covered, nor are all factors that require minor adjustments discussed. But enough is described to point out the general principles involved.

Each machine is considered as only one unit in a series, and its adjustments must conform to those of the other pieces of equipment in the paving train. In this way, hand-finishing operations are reduced to a minimum, and pavements are produced having satisfactory riding qualities.

Frank M. Drake, general construction inspector, Kansas Highway Commission, presented a paper concerning the construction of flexible-type pavements entitled "Longitudinal and Transverse Control for Bituminous Pavers." The purpose of the paper is to show how the usefulness of the floating screed can be extended far beyond that which has been expected in the past. The control described is the outgrowth of an extensive study of the bituminous paver, motivated by irregularities in asphaltic surfaces—results of the "lay it and see how it rides" method of laying hot-mix.

According to the author, the present-day bituminous paver is advertised to possess an inherent automatic leveling principle that holds true only in short areas, lengths of less than the machine's wheelbase, or pull-arm length. The paper pointed out that advancements and improvements have all been in the direction of speed, power, and output, leaving the leveling capabilities—longitudinally and transversely—exactly at the stage they were when the floating screed was first invented.

Drake's paper describes the development of two attachments that have been placed on the leading makes of bituminous pavers, and that have been successful in aiding the operators to cause the paver screeds to follow a smooth theoretical grade line with a definite uniform crown.

This method of paving requires several normal operations, such as ascertaining a new grade line from the original profile, and the use of pneumatic-tire rollers for compaction. It also entails less over-all work by the contractor because skin-patching can be reduced. THE END

JOB REPORT ON TWO CAT NO. 619 TRACTORS WITH MATCHING NO. 442 LOWBOWL SCRAPERS...

Hauling, as well as dumping close and maneuvering in tight quarters, the No. 619-No. 442 is proving its worth on the Park Hill Subdivision, Colorado Springs, Colorado. Typical performance pushloaded by a D8: On a 3700-foot round-trip haul, the No. 619-No. 442 averages 3.38-minute cycles and handles 15 to 16 bank yards per load for production of 220 bank yards an hour.

Good maneuverability, power and acceleration!

Alexander Construction Company is using two Caterpillar No. 619-No. 442 rigs for dirt work on the Park Hill Subdivision, Colorado Springs, Colorado. The project, which covers 340 undeveloped acres, will one day have 1282 homes. About 2,000,000 cubic yards of damp sandy loam are involved in the section where the machines are now shaping land, and the job calls for a great deal of close dumping and maneuvering in tight quarters. Operator Clarence B. Kusma sums up the No. 619s' performance this way: "They handle good. Turn short. Have well-located controls. Get up to 5th gear in about 1000 feet on the flat."

On this project, as on other projects, the No. 619-No. 442 is living up to its advance notices as an excellent "all job" rig. Here are some reasons why. Its Turbocharged Cat Engine provides 225 HP and high torque rise, ideal for lugging under load and for fast acceleration. Its LOWBOWL Scraper handles 14 cu. yd. struck, 18 cu. yd. heaped. It has 30 MPH usable operating speed, plus ground-hugging roadability never before found in a two-wheel tractor of comparable size. New 2-jack hydraulic steering makes it extremely easy to maneuver, yet retains that important "feel of the road" touch. And advance design permits full 90° turns and a turning diameter of 30 feet.

Get the full facts about the "all job" No. 619-No. 442 from your Caterpillar Dealer. Compare it with any two-wheel tractor of similar size for money-making performance. Ask for a demonstration—see for yourself how you can make use of its versatility to step up production on your job!

Caterpillar Tractor Co., General Offices, Peoria, Ill., U.S.A.

CATERPILLAR

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NO. 619-NO. 442 FOR "ALL JOB" VERSATILITY

For more facts, use Request Card at page 18 and circle No. 258

Management

Industrial Relations: Labor laws

by **GEORGE E. DEATHERAGE, P. E.**
construction consultant

Labor laws have been passed for the protection of workmen—and for the protection of employers and the community as a whole. The entire area of labor legislation seems continually in flux, with new laws and regulations, both federal and state, being ground out. Yet these changes are inevitable as unions strive to better wages, hours, working conditions, and fringe benefits for their members, as employers seek to hold production costs to a reasonable level so that they can remain competitive, and as the general public presses for action to ensure that essential community projects and services will not be jeopardized.

Since labor legislation is constantly changing, new court decisions are being handed down, and policies of labor unions are not fixed, a contractor or his agent can best keep abreast of new developments by belonging to the contractors' association in his area or the Associated General Contractors of America, Inc. Trade magazines that publish recent court decisions, data on new or proposed legislation, and trends in the labor market are helpful sources of information, as are all publications of the U. S. Department of Labor.

But a contractor does not merely comply with labor laws; he deals with labor. This involves a contractor's industrial-relations and personnel-management setups. These have to work with labor, either as individuals or as groups represented by the labor unions. On large work, employment and industrial relations are handled by the personnel manager and his staff. The project manager comes in only when it is necessary to meet in conference or to settle disputes and misunderstandings. If the work is not large enough to maintain a personnel manager, then the duties fall on the shoulders of the man in charge of the work in the field, with, perhaps, the assistance of the contractor or some member of the firm.

In a general way, the man in charge of the job reflects his employer's attitude toward labor and the unions. If the contractor is antagonistic toward organized labor, and has a past record to that effect, relations with labor are bound to be difficult. However, if he accepts labor as an integral part of the business structure and has worked toward a good relationship with union leaders, the path is considerably eased.

Regardless of what situation exists, the project manager or superintendent should strive to build up a friendly relationship with local labor leaders of all crafts.

If the job has been properly planned in advance, the personnel manager can be advised, before operations start, of the approximate number of men of various crafts required.

A good many headaches can be avoided at this time if labor leaders are called in conference. The job can be discussed, possible jurisdictional disputes ironed out, and information secured on meeting labor requirements. The personnel manager, at this time, also gets to know the men he will have to deal with on labor matters.

Union rules

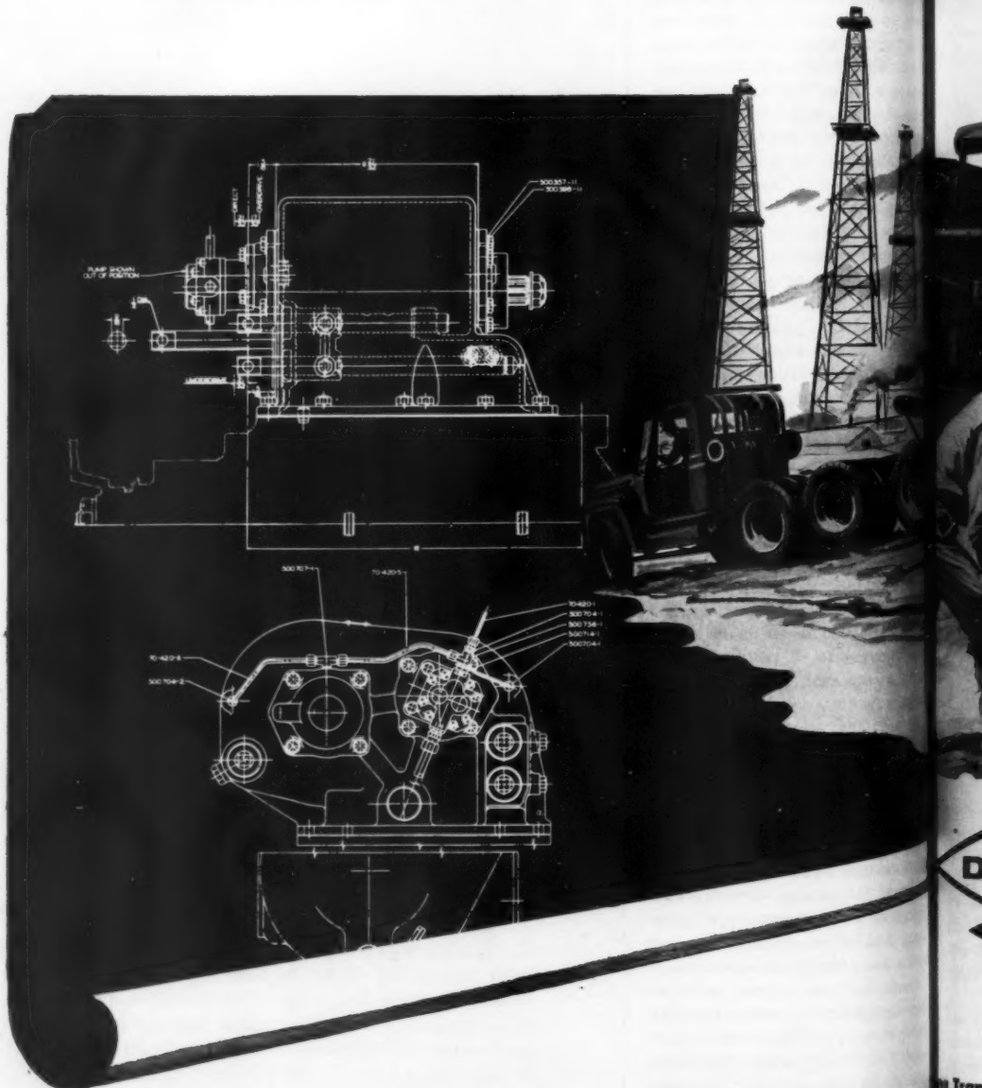
At this conference, arrangements should be made to secure a supply of rule books from local labor leaders for distribution down to the foreman level.

Local contractors' associations or employers' councils will, in [illegible] cases, have established the pra[illegible] of making yearly arrangements w[illegible] the unions. Negotiations should [illegible] conducted through these organiz[illegible] tions or with their aid and coop[illegible] tion.

It is a good policy for the proj[illegible] manager or superintendent to [illegible] range to attend contractors' assoc[illegible] tion meetings, where labor con[illegible] tions, demands for wage increa[illegible] attitudes on jurisdiction, welf[illegible] funds, etc., are discussed in detail. [illegible] this way, the project manager or s[illegible] perintendent can become famil[illegible] with what is going on in the area.

Most contractors' associations s[illegible] publish news bulletins, either [illegible] monthly or monthly. The secret[illegible] will be familiar with changes in l[illegible]

NEW SPICER PTO HA[illegible]
CAPACITY FOR HEA[illegible]



This is the fifty-first of a series of articles on Construction Management by George E. Deatherage, P. E., The National Schools of Construction, Satsuma, Fla. The articles are based on an eight-volume "Manual of Advanced Construction Management" published by George E. Deatherage & Son, Construction Consultants, Satsuma, Fla.

...r legislation, court decisions on ...nding cases, demands for wage in...reases, and changes in union rules ...nd regulations. This information is ...relayed to the membership through ...lletins.

On a union job, it is usual to em...ploy the workmen through the busi...ness agents of the various craft ...unions. It is a simple matter to ...phone the union hall and place an ...order for the men required. Keep ...in mind that at least several days' ...notice should be given so that the ...force may be assembled. Each work...man sent to the job will carry an ...employment slip, signed by the union ...representative, allocating him to the ...contractor's specific work.

On nonunion work, the workmen ...can be secured through public or private employment agencies, by advertising in the newspapers, or through a labor agent.

Labor laws

In addition to complying with state labor laws, the contractor must also comply with federal labor laws. Requirements for both are made a part of and are stated in the contracts between the contractor and government or government agencies.

If there is doubt as to details, the nearest regional office of the Wage and Hour Division of the Department of Labor should be consulted. There is an office in every major city in the country.

Contractors may avail themselves of the arbitrating facilities of the National Joint Board for Settlement of Jurisdictional Disputes by placing themselves on record by forwarding to the board's chairman at 901 Massachusetts Ave. N. W., Washington, D. C., a stipulation that they will follow present agreements and decisions on record on work assignments, and the jurisdictional decisions of the board. This will assure them of the board's assistance when it is needed.

The board requires that the following steps be taken when there is a question of jurisdiction:

1. A specific assignment of the work in dispute must be made. It is a violation of the board's rules to hold up disputed work or shut down a project because of a jurisdictional dispute.

2. Assignment should be based on a decision or agreement of record covering the disputed work; where there is no agreement or decision, local practice should be followed. If there is no local practice and no decision or agreement, the contractor should use his best judgment in assigning the work.

3. Once the assignment is made, the contractor must continue with no change in work assignment until and unless told otherwise by the joint board. When so directed, he must comply.

4. If there is no stoppage over assignment of work, the chairman of the joint board must be notified immediately.

Personnel policies

The personnel policies to be followed by the superintendent or project manager will be established by the employer. It is vital for a new man to find out what the policies are and to comply with them. The superintendent or project manager is the agent of the employer and will be held responsible for policy violations.

If a company has Employees' Welfare Insurance, medical examinations will be required and the personnel manager will have increased responsibilities. Complete details of such plans may be secured from the larger insurance companies.

It should be the duty of the personnel manager or someone appointed by him to check up on all cases of employee illness and disability from job injuries.

When a workman is hired at the employment office, it is good practice to supply him with an assignment slip. The original goes to the new employee; he turns this over to the foreman. The duplicate goes to the service record, the triplicate to the chief timekeeper as authority to enter the man on the payroll and to accept his time on the foreman's reports.

Any change in rate or classification of an employee should be shown by a change-of-rate slip. These slips come from the foreman, and sufficient copies should be made to supply all interested parties, including the timekeeper, payroll office, and the employment office. If it is a cost-plus job, another copy goes to the owner's representative.

If possible, classification changes and rate changes should be confined to the start of a new payroll period. This will make it unnecessary to

HEATER

EAUTY WORK

● Rugged, round-the-clock service, where full engine torque is a "must", calls for a top-mounted PTO with the capacity to transmit that torque constantly and smoothly. Whether the vehicle is an oil field rig, a cement mixer truck, or a sand and gravel dump, the job can be done at highest operating efficiency with a Spicer forced-feed, top-mounted power take-off.

The Spicer top-mounted PTO—with either a Spicer 8031 or 8341 auxiliary transmission—outlasts conventional PTO's because positive lubrication is assured at all times, regardless of the operating angle of the vehicle. An oil pump provides forced-feed lubrication at slow speeds with full engine torque.

Spicer top-mounted power take-offs transmit the full torque of the engine with forward transmission in direct drive, or loads equivalent to engine torque with forward transmission in gear, to operate air compressors, heavy duty winches, large pumps and other equipment. Two speeds forward, one speed reverse.

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Many of these products are manufactured in Canada by Hayes Steel Products Limited, Merritton, Canada

For more facts, use Request Card at page 18 and circle No. 259

work two rates on the payroll for the same period.

When a workman is discharged or laid off, it is necessary to make out a termination slip. The original goes to the workman, and copies are sent to the time and employment offices. The copy at the employment office is to be enclosed within the service record and the latter posted up to date in the spaces provided.

Particular attention must be paid to the wording of the "reasons for release" for this will determine whether or not the man is eligible for unemployment relief from state agencies. Rules and regulations on this matter vary among states, and both the superintendent and personnel manager, as well as all foremen having the authority to terminate an employee, should know the policy of the state where the job is located. Both the employer and employee may appeal from decisions of the employment security board.

Subcontracts

On every job, some points of contact arise between the subcontractor and the industrial-relations department incidental to starting the work in the field.

Insurance and bond requirements must be met, arrangements made to pass subcontractors' tools and men through the gate, etc. The chief clerk must notify the subcontractor that copies of all insurance certificates required by the contract must be on file in the field office before work is started. On satisfactory completion of such negotiation, he shall notify the chief of industrial relations, chief timekeeper, and purchasing agent that requirements have been met and work started.

If a bond is required, copies of
must be in the chief clerk's
at the same time. The chief
must arrange to have an
the subcontractor meet the
industrial relations and discuss
resentative methods of employ
agreeable to contractor and
ated contractors on the work,
contract stipulations.

The subcontractor should be
structed that each of his men
be identified with a colored
which is secured from the
timekeeper. The chief timekeeper
to maintain a subcontractor's
ter in which the name of all
contractor's employees appear
the badge number. As men are
or terminated, the record is
accordingly.

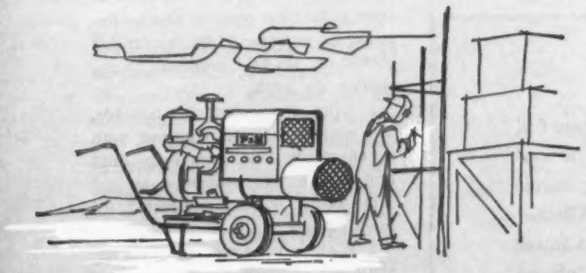
Subcontractor's workmen are to
issued a pad of special parcel
which must be used when tools
material are removed from the
These must be countersigned by
head of the tool and equipment
tion, in the case of tools, and by
chief storekeeper, in the case
materials.

The supervision of all subcontractors from this point on passes to
office of the superintendent of
struction, who appoints some
ber of his staff to supervise
tractors' work.

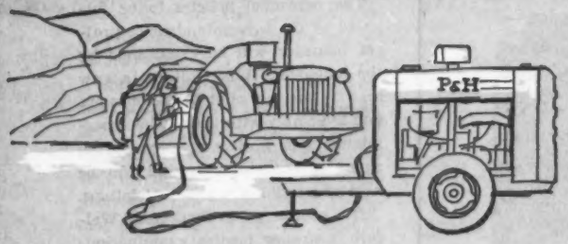
Where a personnel department
ists, it is a common practice to
watchmen, guards, and firemen
der the supervision of the
manager. The superintendent
project manager supervises
people if a firm does not
personnel department. When
services are needed, the local
of police can be consulted, and
can arrange to employ retired
personnel on the work. These
are familiar with local
and the people, know the
element, and are trained in
work. The work of a watchman
guard is not so strenuous that
police personnel cannot handle
a satisfactory manner. Such a
also makes for cordial relations
the police authorities in the
nity.

These are just the main points
personnel management in
tion. It should be kept in mind
labor laws, customs, and
vary in each state and in
every locality.

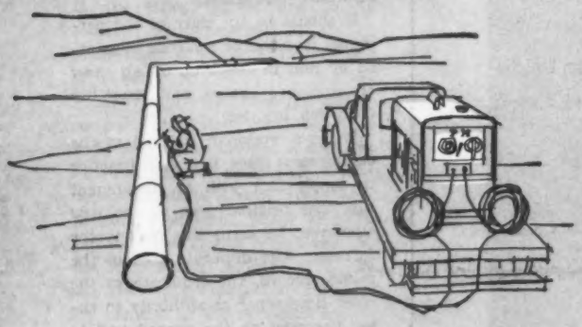
*(Next month's article will deal with "
agement: Elements of leadership.")*



eliminate rewelds



and callbacks



6 engine-driven models for field welding in the 25- to 500-amp. range

Put your out-of-shop welding on a paying basis by welding the job right the first time. You can do it with portable, self-contained P&H engine-driven welders.

Here's why: Accurate voltage control enables operators to make precise settings and re-settings without "jockeying" or other adjustments. Superior current stability — even at extreme ends of range — permits deep penetration without burn-through. Instantaneous recovery maintains 100% arc stability throughout the welding cycle, thus preventing popouts.

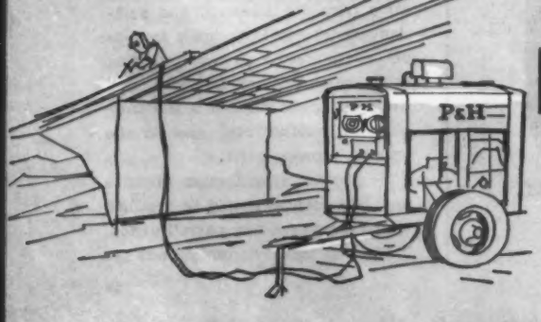
The built-in controls simplify welder operation. They enable operators to weld faster — and to lay down stronger, cleaner welds the first time. As a result, there's no need for rewelds or costly call-backs.

P&H welders are built to give long-life, low-cost welder service — to withstand hard use and rough handling in the field. They need less care because all non-essential parts have been eliminated. Powerful gas or diesel engines permit full-shift operation with fuel to spare.

Pick the P&H welder you need from industry's most up-to-date line. Six models, skid-, or wheel-mounted — with manual or electric starting. Write for Bulletin W-158.

318

with P&H portable welders



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Waukesha names manager; adds to other's duties

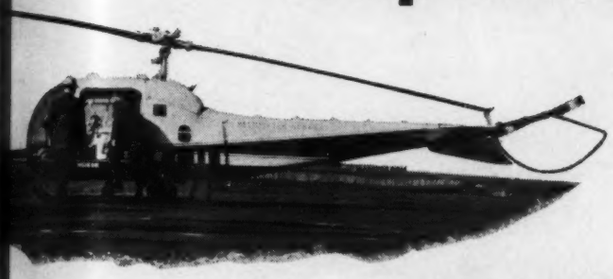
■ A. Foster Sheller has been
manufacturing manager of the
kesha Motor Co., Waukesha, Wis.
will supervise and coordinate
ties of the departments within
organization directly concerned with,
or closely related to, the manufacturing process.

Clarence W. Hahn, who has been
production manager of the company
since 1957, will now supervise all
manufacturing and shop departments
in addition to his other duties.

←For more facts, circle No. 260

B.F.Goodrich

Copter hop over the new Niagara



Ride in the Bell Ranger and see how B.F.Goodrich tires help build the world's mightiest power project

SOON THE CHURNING WATERS of the Niagara River will be generating more electrical power than ever—over two million kilowatts, enough to light a city the size of Chicago.

More electricity at lower cost is what we'll get from the $720-million Niagara Power Project, one of the biggest peace-time construction jobs in our history.

Already trucks and other earth-movers have shouldered their loads more than 800,000 times—enough trips to take them ten times around the world.

To cope with the challenges of this and other tasks, Merritt-Chapman & Scott Corporation, largest contractor on the project, uses B.F.Goodrich tires and other products.

NOW WE'RE AT 3,000 FEET. Below us is the entire Niagara Project. At the upper right are the Falls. At upper left, 2½ miles above the Falls, is the Intake Area. Here water will be diverted from the Niagara River into 2 giant covered conduits, each of which is as wide as a 4-lane highway and 5 times higher than the Holland Tunnel. These conduits take the water into the vast Storage Reservoir. From there it moves to the new Niagara Generating Plant, where it plummets down to drive 13 generators. Turn the page and learn how this mammoth job is progressing with the aid of B.F.Goodrich tires.

This B.F.Goodrich report continues ▶

SWOOPING DOWN we come over the conduit area that will carry water from the Niagara River to the new reservoir. Excavations for the 46′-wide covered conduits are 110′ x 50′. The trucks below us, hauling away rocks, are equipped with B.F.Goodrich tires. Altogether, more than 2100 B.F.Goodri tires—on dump trucks, loaders, graders and other equipme —work 'round the clock, six days a week, rolling over ro strewn Niagara excavation sites.

See how 2100 B.F.Goodrich tire

B.F.GOODRICH ROCK SERVICE TIRES ha run up amazing service records at Niagara— over 5,000 hours in some cases! The ne B.F.Goodrich Cut Protected tread compou is outstandingly successful at withstandi cutting and chipping from abrasive Niaga rock. Massive double-chevron Rock Servic cleats give extra traction in forward o reverse. And because of the B.F.Goodric Flex-Rite Nylon cord body, Rock Servic tires are almost immune to heat blowouts an flex breaks. Result: you get more origina tread hours of service, more retreadable tire

TO GIVE CONTRACTORS what they need *when* they need it, B.F.Goodrich built a warehouse near the Niagara project. A complete line of B.F.Goodrich tires is stored, ready for every emergency. At the B.F.Goodrich Tire Service Building on the job site, a crew of trained tire maintenance men works in shifts, 'round the clock.

IT'S AN EMERGENCY, and the B.F.Goodrich Tire Service Man is there. He's trained to handle any type tire on any type equipment. He has at his disposal all the latest power tools, such as hydraulic cranes, pneumatic wrenches, bead jacks. Background: 13 penstocks at Niagara Generating Plant will direct torrents of water into giant turbines. Penstocks are 462 feet long.

are helping men harness Niagara

From the beginning of work on the Niagara Power Project, B.F.Goodrich on-the-scene specialists have helped determine exactly the right B.F.Goodrich product for each particular job. In addition to Rock Service tires (now available in the new Cut Protected compound), B.F.Goodrich Rock Logger, Tractor Grader, All-Purpose, Mud-Snow and Power Express tires are at work.

B.F.Goodrich hose feeds air to machines drilling dynamite holes. B.F.Goodrich rain suits, gloves and footwear protect hundreds of construction workers.

B.F.Goodrich conveyor belts will carry materials for 1,300,000 cubic yards of concrete, total required for the entire generating plant. And helping to keep the whole project humming are special B.F.Goodrich maintenance and service facilities—all part of the new B.F.Goodrich Unified Contractor Program.

No matter what your off-the-road job, B.F.Goodrich is ready to serve you, and help you save. Your Smileage dealer is listed under Tires in the Yellow Pages of your phone book. *The B.F.Goodrich Company, Akron 18, Ohio.*

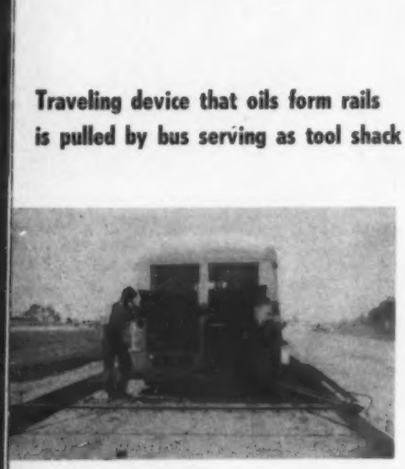
SPECIFY B.F.Goodrich Tubeless or tube-type tires when ordering new equipment.

Smileage!

B.F.Goodrich *off-the-road tires*

Tricks of the Trade

Traveling device that oils form rails is pulled by bus serving as tool shack



Oiling the forms ahead of a paving train has always been a hand job. Bill Mengel, vice president of F. F. Mengel Co., Custer, Wis., figured he could save money by turning the job over to a machine.

He invented an automatic sprayer that rides on rails. The device is pulled by a bus, which also serves as a traveling shack for tools and storage. The spray machine is built of 1-inch pipes with metal shoes riding the rails. Each rail is sprayed by two nozzles—one directed at the inside of the rail and the other directed at the outside. A pump driven off the rear-mounted main engine supplies pressure to the system.

The supply of Sinclair No. 2 paraffin oil comes from one of two drums carried by a frame at the rear of the bus. By means of an air-operated cylinder, the spray can be turned on and off from the driver's seat. The bus generally stays several hundred feet ahead of the paving train.

The bus, itself, is a convenient

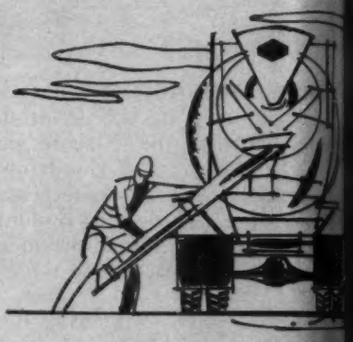
place to store hand tools used by the paving crew. The inside of the converted bus is lined with shelves and work benches. It makes a good place to store odds and ends that might disappear if they were left outside all night.

Mengel used the spray machine to speed the work of paving 11 miles of Wisconsin Interstate 94 on the route between Chicago and Milwaukee. In an unusual paving operation, the company was using transit-mix trucks to place concrete for the 12-foot lanes.

Scraper on shouldering rig leaves neat joint, frees workman for other job

A simple and inexpensive job-built attachment on a Blaw-Knox shouldering machine cleaned up the joint between the bituminous shouldering material and the highway pavement, freeing one crew member for other work.

On this highway resurfacing project near Moorcroft, Wyo., Carlson-Lein Co., Rapid City, S. Dak., found it difficult to prevent a small amount of the bituminous mixture spilling across the joint onto the highway lane. This was due, in part, to the steeper slope of the shoulder. To clean this excess material off the pavement, this contractor kept one workman busy with a broom or rake pushing the excess material back on-



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- Inexpensive, trouble-free mechanical cab control
- Standard 12'6" deep-dished chutes, paving chutes with 4" added width, or new lightweight aluminum chutes and extensions.

to the shoulder immediately ahead of the roller.

To overcome this problem, the job shop came up with this simple scraper attached just behind the blade of the shouldering machine. It picked up the bit of excess bituminous mix and spread it uniformly back over the first few inches of the shoulder. The roller then followed right behind the shouldering machine, and the extra workman spent his time touching up any spots that really demanded attention.

New method of cementing grit to steel expansion joints helps reduce skidding hazard

A technique of coating steel expansion joints on a bridge deck with abrasive grit to give vehicles better traction and help prevent accidents has proved successful on the San Francisco-Oakland Bay Bridge.

The expansion joints, which range from 5 to 16 feet wide and run the full width of the roadway, become very slick in wet weather and increase the chances of accidents.

The coating method, developed by California's Division of Highways, is essentially that of cementing aluminum-oxide granules onto the metal area with polysulfide-epoxy adhesive.

Crews first scoured the steel surface of a joint so that the adhesive would make a tight bond. Sand blasting was done by two workers in protective clothing. Then polysulfide-epoxy adhesive, a free-flowing liquid made by Thiokol Chemical Corp.,

was applied by means of heavy paint rollers. Aluminum-oxide grit was poured into the adhesive, a thickness of ⅛-inch of grit being applied to the surface. Metal "ovens" were then placed over the area and heated with propane burners for half an hour to accelerate the drying of the adhesive. After the "ovens" were removed, the application was allowed to harden for up to 1½ hours before the lane was opened to traffic.

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a new *proved* advance in truck mixer design!

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ILORED TO *YOUR* OPERATION!
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H-STRENGTH DESIGN!
ra-sturdy frame uses torsion-bar principle . . . engthens, instead of stresses, the truck frame eliminates misalignment and distortion.

EATER LEGAL PAYLOAD!
htweight, shorter design provides better weight tribution, permits increased payload without vio- ng legal load limits.

ER OPERATION!
rugged transmission uses multi-disc duplex ch running in oil — and provides *single-stick* control of all drum functions: clutching, high-low speed, mixing, and discharge.

LESS MAINTENANCE!
Transmission is built to aircraft specifications — far stronger than automotive mixer transmissions, and with correspondingly greater operating life.

Constant frame alignment assures reduced wear on drive components — longer chain or gear life.

AND FEATURING THE FAMOUS SMITH DRUM!
Unchanged, because test after test proves it is still the world's fastest-charging, best-mixing, and fastest-discharging truck mixer. Anti-spill design carries up to 1 yard more concrete per load than any other mixer!

THE NEW SMITH MIXER IS AVAILABLE NOW—
See your T. L. Smith distributor for a demonstration!

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Electric hammers drill holes for expansion anchors used to attach stadium seats

Seats for Candlestick Point Stadium, new home of the San Francisco Giants, were attached to the precast-concrete seat-support sections by expansion anchors set in holes that were drilled into the vertical legs of the seat supports.

Workmen used Bosch electric-powered magnetic hammers to drill

the more than 90,000 holes required to attach the steel divider units that hold the wooden seats. Homelite generators supplied the power.

The precast-concrete seat-support units that make up the lower deck and the prestressed-precast units of the upper deck were fabricated by Ben C. Gerwick Co. at Petaluma, Calif., and trucked to the job. After they were set in place, the seating subcontractor, American Seating Co., Grand Rapids, Mich., drilled the anchor holes and set the 40,000 seats.

Using a simple wood cradle for the hammer and a piece of soft carpeting to protect his hands, a workman drilled the holes in the lightweight-concrete sections very rapidly. Bolts with lead expansion anchors were set in the holes, and the seat frames were attached to these bolts.

The seating crew had to maintain a fast pace to get all the seats installed in the limited time between the setting of the support units and the deadline date for completion of the stadium.

←For more facts, circle No. 262

Pittsburgh Public Auditorium takes shape in concrete, steel

The box girder of the cantilever arch rib and the tie-back framing for the dome of the Pittsburgh Public Auditorium begin to arch over the interior area. The dome will have eight stainless-steel leaves, six of them riding on three sets of tracks on the reinforced-concrete ring girder to open the auditorium to the sky. The ring girder, banked 13 degrees from the horizontal, is supported by pairs of columns—one arched and one vertical. The arched columns tie back into reinforced-concrete piers that are founded on spread footings.

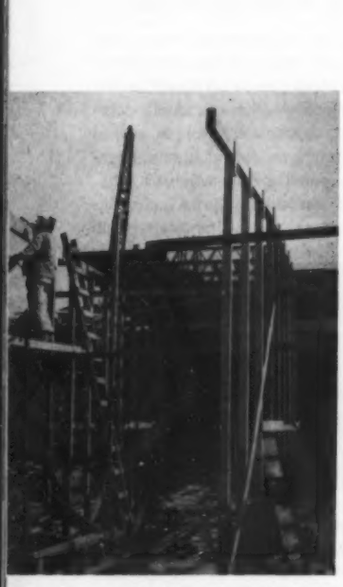
Golden Triangle structure will boast world's largest retractable steel dome

by TONY MAVROUDIS
field editor

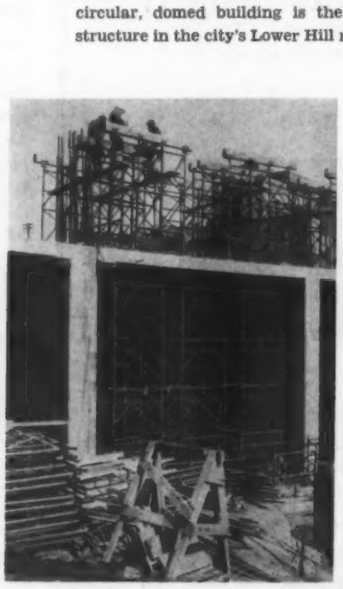
Concrete and steel operations now in progress are giving Pittsburghers an idea of how their $20 million Public Auditorium will look when completed in the spring of 1961. The circular, domed building is the key structure in the city's Lower Hill redevelopment program, a plan that will transform 95.4 acres of blighted area at the upper end of the famous Golden Triangle into a modern show place of civic development.

The unique feature of the auditorium is its vast stainless-steel-sheathed retractable roof.

The roof structure, with the largest retractable dome in the world, is nearly circular in plan; it is some 415 feet in diameter and 136 feet high at the center. The dome is divided radially into eight 45-degree sections, six



Forming for the podium deck slab starts with 4×4-inch shores, connected by Ellis clamps, which support steel Spanalls topped with 4×4-inch stringers and deck forms.

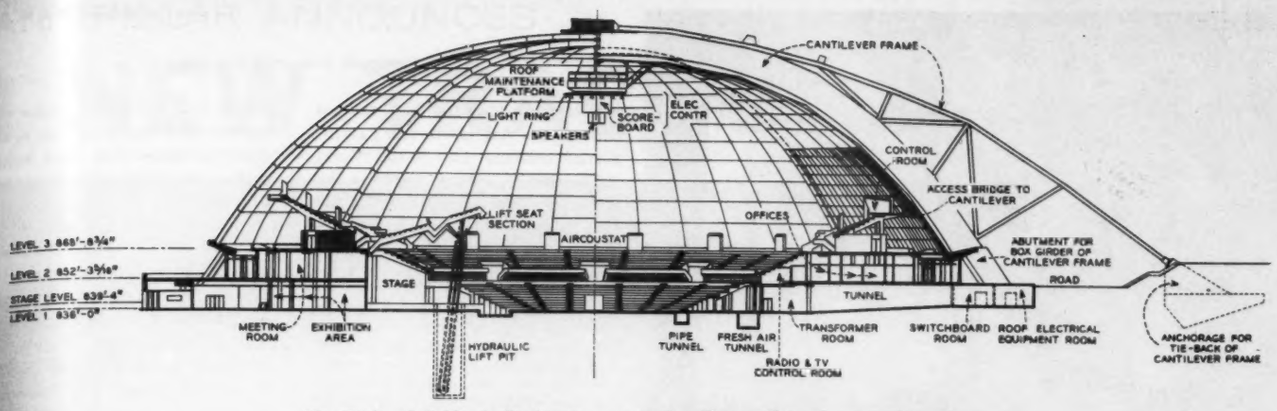


After shoring has been removed, scaffolding supports the podium slab while ring-girder concrete is placed. Formwork and the dead weight of the concrete on the deck make scaffolding necessary.

Forming for a 30-degree section of the ring girder is ready; the special steel template makes possible proper spacing and placement of anchor bolts for the track-bearing plates.

Track base plates are being positioned over embedded anchor bolts in a partially completed section of the ring girder. Movable leaves on this side of the dome will nest over the fixed leaves at this point.

Steelwork towering over the ring girder is for the two stationary sections of the dome and cantilever arm. The 50-ton derrick on a 125-foot-high tower will place the high steel for the dome, which will rise to 136 feet at the center. The tower can be moved across the width of the area. Dick Corp., Large, Pa., is the general contractor for the auditorium; American Bridge is fabricating and erecting the steel.



The Pittsburgh Public Auditorium in cross section. The cantilever frame is the main support of the roof leaves when they are in the open position. The stage is located under a section of permanent seats that can be raised hydraulically.

movable and two stationary. When the roof is retracted, the six movable sections, three on each side, will glide one over the other and finally cover the two fixed sections so that the huge area is open to the skies. It will take 2½ minutes to move the roof sections from the closed to open position.

The six movable leaves will ride on three sets of tracks supported by a reinforced-concrete ring girder completely encircling the arena. The two stationary leaves, which cover a quarter of the arena area, will also be supported by the ring girder. Its width is just under 20 feet, except in the quarter supporting only the two outermost movable leaves. Here it will be about 16 feet wide and will support a single set of tracks for the dome leaves.

The upper surface of the ring girder is banked about 13 degrees from the horizontal toward the interior of the auditorium. Reinforced-concrete frames, located every 7½ degrees around the perimeter (about 26 feet apart) support the ring girder.

Dick Corp., Large, Pa., the general contractor for the auditorium, has been concentrating on the concrete operations for over a year.

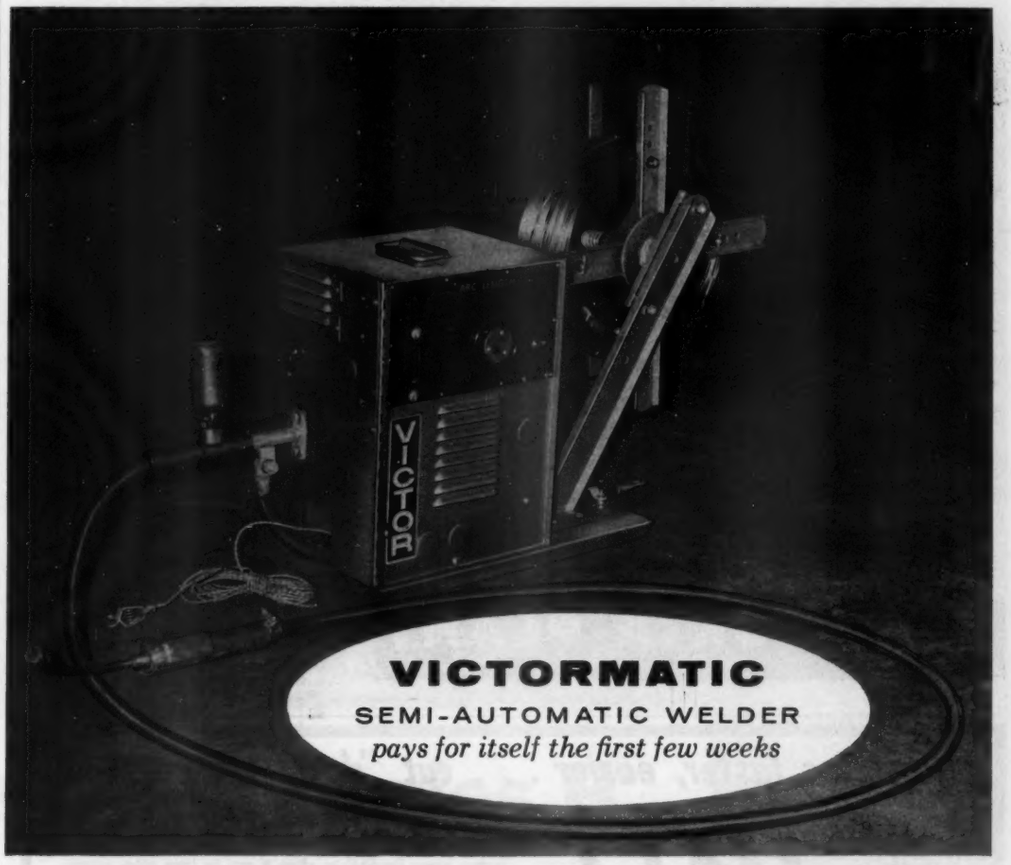
Ring-girder supports

The ring girder is supported by pairs of columns—a vertical and a 2x2-foot inclined column that ties back into a reinforced-concrete pier. These piers, which are about 2 feet wide—except at the expansion joints where the thickness is increased to 2 feet 7 inches—are founded on spread footings on shale. Their heights vary, according to the depth of the rock, from 6 to 15 feet. The piers, at various points, also support a vertical column that rises to the podium-deck level. This consists of a 10-inch-thick concrete slab, about 50 feet wide, that is supported by columns running along the exterior, the center, and the inside perimeter. The center columns are the ones supported by the ring-girder piers.

Form sections

Dick Corp. is pouring the ring girder in about 30-degree sections, using prefabricated timber forms supported on Beaver-Advance scaffolding. A 1-inch expansion joint, formed at the

(*Continued on next page*)



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For more facts, use Request Card at page 18 and circle No. 263

(*Continued from preceding page*)

The unusual support for the podium deck and ring girder can be seen underneath the deck. The inclined column rising from a concrete pier passes through the podium deck slab without making a structural connection with it. The vertical column on the same pier supports the podium deck and other columns.

end of each 30-degree bay, extends through the ring girder and its supporting columns. This is the reason for the greater column widths at the end points. American Bridge Co., the steel fabricator and erector, has furnished Dick Corp. with steel-channel templates, supported by the scaffolding, so that the sloping anchor bolts for the track base plates can be correctly positioned. The upper inclined surfaces for the base plates on top of the ring girder are formed by steel sections suspended from the steel template. These templates also support curved wood haunch forms.

The horizontal 10-inch podium deck is formed by ⅝-inch-thick 4×8-foot plywood panels supported by 4×4-inch shoring. These rows of shores are capped and cross-braced before being spanned by steel Spanall form supports. The Spanalls, in turn, support 4×4-inch stringers that support the plywood sections. Dick Corp. is covering the plywood sections with Techni-Cote plastic paint after each use so that the 4×8-foot sheets can be re-used. Concrete placement for all vertical walls is being done in Universal Uni-Form steel-backed plywood panels.

The ready-mix Plastiment concrete for the podium deck and other sections of the structure is being placed by one of the Manitowoc cranes. After concrete has been placed for the podium deck, work is ready to start on the ring girder just above. The supporting concrete columns are extended upward to support the slab, but before this is done, the contractor strips the podium-deck forms and shoring. These supports are then replaced by steel scaffolding to support the deck slab.

This deck support is necessary because of the load placed above it during the construction of the ring girder. The podium deck has to support additional scaffolding which, in turn, supports the forms for the higher lift, as well as the dead weight of the concrete being placed. Care is exercised during the forming and placing of the podium deck to allow for passage of the inclined ring-girder column. This support actually passes through the podium deck; there is no structural connection between the two.

Steel erection

American Bridge is using two Manitowoc cranes—a 3500 with 110-foot boom and a 3900 with 120-foot boom—plus a 50-ton stiffleg derrick to handle the steel erection of the steel arch rib, its supporting tie-backs, and the dome-roof section. The derrick is located atop a 125-foot steel tower that is supported on two traveling beams so that the derrick can be moved from the base of the arch rib out to the center of the auditorium.

The derrick is powered by a Clyde 3-drum hoist having a General Motors diesel equipped with a turbo-charger. The hoist, with a 20,000-pound lead-line pull capacity, is also equipped with two swinging hoists to help turn the derrick. These are located at the tower base platform, with the lines running up the tower leg and around the bull wheel. Each tower leg rests on a pair of steel wheels that provide the mobility needed. The tower can be moved by being winched

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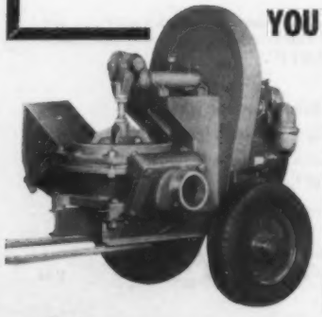

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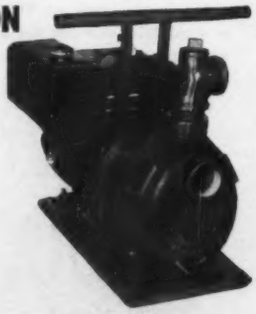

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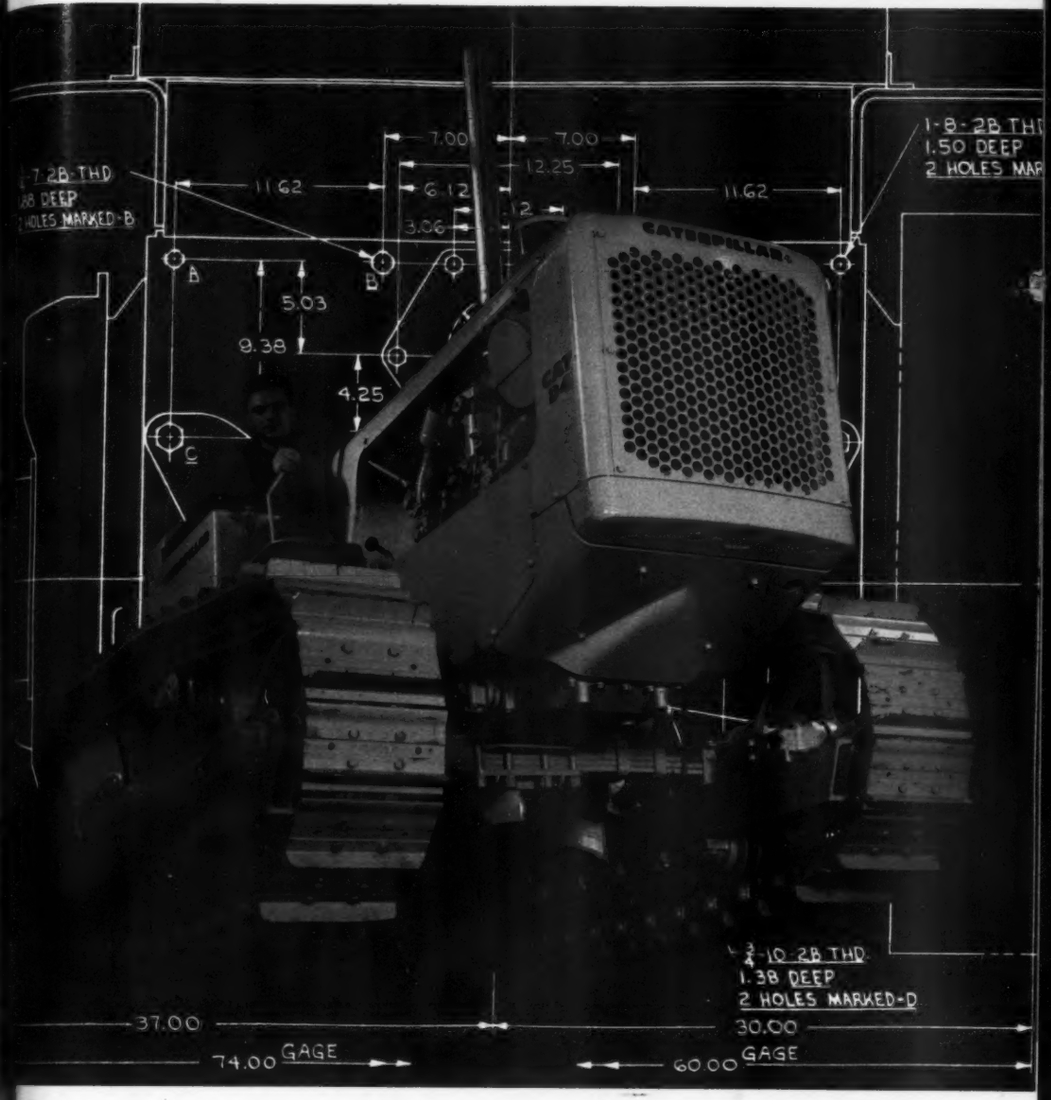
CATERPILLAR ANNOUNCES

2 NEW TRACTORS



04 Series C · D6 Series B

mpletely redesigned to boost production and lower costs

New D6 Series

93 HP — 19,495 lb.
Flywheel — Max. drawbar
Cat D333 Diesel Engine
5 speeds forward, 4 reverse
Operating weight 18,280 lb.
(74" gauge)

ATTACHMENTS for the D6 and D4, individually designed to match the capacities of each machine, include Bulldozers, Tool Bar, Rock Rakes, Winches, K/G Blade, Back Rippers and many others.

New D4 Series C

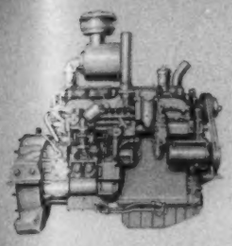
65 HP — 13,000 lb.
Flywheel — Max. drawbar
Cat D330 Diesel Engine
5 speeds forward, 4 reverse
Operating weight 11,710 lb.
(60" gauge)

STARTING EQUIPMENT for both tractors includes an improved starting engine with recoil starter for fast starts. 12-volt in-seat starting for starting engine available. 24-volt direct electric starting for diesel optional.

NEW D6 Series B and D4 Series C Tractors..

They look different—they are different. Look them over and
for yourself the advances Caterpillar has built into the new
styled D6 Series B and new D4 Series C Tractors. Each, in its
class, answers your need for new high production, new opera

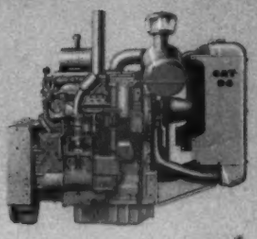
New compact Caterpillar Diesel Engines deliver 25% more lugging ability



D6 powered by 93 HP 6-cylinder Engine

Maximum drawbar pull, 19,495 lb. Provides power with dependability built in for a long life of economical, efficient operation.

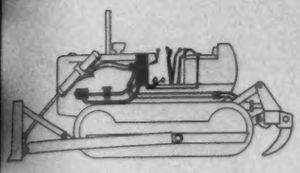
Here's power for even bigger jobs for the D6 and the D4—two completely new Cat Diesel Engines. Each is specifically designed for the tractor it serves. Yet each has certain basic characteristics in common. For example: 25% more lugging ability . . . new compactness, with new ruggedness . . . famous Cat fuel injection pumps in new, easily serviceable housings . . . the reliable Cat precombustion chamber design that delivers maximum horsepower on heavy, economy-type fuels . . . a new direct-acting governor that makes quick fuel adjustments, picks up loads fast . . . a new improved gasoline starting engine with recoil starter for fast starts in any weather—many others!



D4 powered by 65 HP 4-cylinder Engine

Maximum drawbar pull, 13,000 lb. New design results in a smooth, vibration-free performance through all speed ranges.

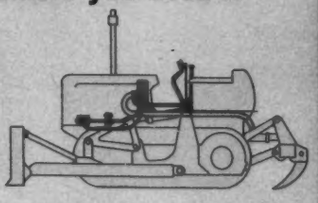
New integral hydraulic systems put more power where you need it



D6 Integral Hydraulic System

No. 165 Hydraulic Control for Bulldozer, 54 GPM—1500 PSI
No. 143 Hydraulic Control for No. 6 Tool Bar, 29 GPM—1700 PSI

More work power at the tools—you'll find that's one of the big advantages of these new Cat hydraulic systems. Under-the-hood mounting of tank, pump and valves permits convenient routing of hydraulic lines to bulldozer or implement cylinders, frees front and rear end for optional equipment. Center-pivoted cylinder mounting on the D6 gives increased blade lift/drop range for increased production. Hydraulic control system provides hand control for bulldozer and/or ripper, foot control for tilt cylinder. A choice of three hydraulic circuits gives you complete flexibility to meet all needs. You also have a wide choice of tools to make both tractors even bigger earners.



D4 Integral Hydraulic System

No. 143 Hydraulic Control with:
29 GPM Pump—1700 PSI for Bulldozers
17 GPM Pump—1700 PSI for Tool Bars

New operator convenience and comfort in co-ordinated compartments

D6 operator's compartment

Look what's happened to the operator's compartments in the D6 and D4! Both are all new and completely restyled. The controls are co-ordinated to make one motion flow into the next one. They reduce hand movements and speed every operation. The forward-reverse lever is located next to the operator's right hand to quicken 'dozer cycle times. The transmission speed selector is only inches away. The governor control is high and clear, extending from the new streamlined, quick-vision dash. Boosters for steering clutches provide muscle-saving operation. And the comfortable, high-placed seat allows full view of tools for faster, more accurate work.

D4 operator's compartment

better than ever with new work-producing features!

economy and new earning capacity. Each is completely redesigned to lick the tough challenge of today's fast-paced jobs. Some of their new features are described here. Notice how they complement performance-tested features to make these modern, heavy-duty rigs better than ever. See your Caterpillar Dealer for complete facts about them and their matching equipment. He'll gladly demonstrate on your job.

More features that put the new D6 and ne D4 out front in production and economy!

Dry-type air cleaner

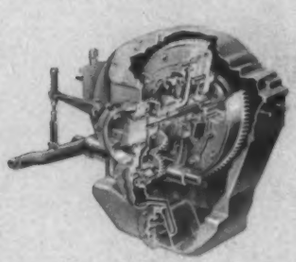
Most efficient air cleaner ever developed. Removes 99.8% of all dirt from intake air during every service hour, even in the dustiest conditions. Can be serviced in five minutes. Cuts maintenance time (by as much as 75%) and eliminates all oil costs. This modern-design oil cleaner is new in both the D6 and D4.

Hydraulic track adjusters

Another on-the-job timesaver developed by Caterpillar. An ordinary grease gun is all that's needed to assure proper track tension. Just open the inspection door and apply a few strokes. The hydraulic cylinder does the rest automatically. Job-tested, hydraulic track adjusters are optional on both the D6 and D4.

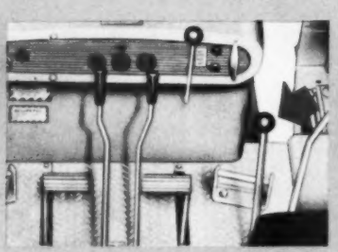
Lifetime lubricated track roller

That's right – lifetime! Proved by more th five years' testing. Exclusive floating seals protect rollers and idlers – keep dirt out. No lubrication or greasing a required until rebuilding. Help you re profits instead of repair bills. This lon feature is new in both the D6 and D4.



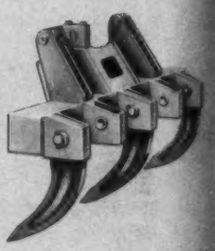
Oil clutch

The most advanced clutch design in the industry – a Caterpillar exclusive. Provides up to 2,000 hours' service without adjustment, the equivalent of about 13 months' "adjustment-free" operation. Virtually eliminates down time for clutch repair. Retained on the D6. Optional on the D4.



Forward-reverse lever

Retained on the D6, this lever is new on the D4 – **an exclusive feature in its class** – and puts the D4 way ahead of the rest in fast 'dozing cycles. Next to the operator's right hand, and only inches away from the transmission speed selector, it lets you change direction quickly and easily.



Matched equipment

You can multiply the profitable uses of h the D6 and D4 with rugged matched equ ment. Built to specifications for each ti tor, there are Straight and Angling Bulldo Rippers, Tool Bars, Rock Rakes, Winch Bulldozer-mounted Back Rippers, K/G Bla and other tools. Hydraulic or Cable Contr

ARE YOU GETTING ALL THE PROFIT?

Now is the time to take careful stock of your equipment —to make sure it's earning you all the profit to which you are entitled. All too often, profits slip away because a tractor that appears to be paying its way is actually not delivering the way it should.

A veteran tractor, for example, may be holding down a key job. Repair costs are low. On the face of it, the tractor seems to return a decent profit. But in reality—that tractor could be losing as much as it earns.

Machines have improved a lot in recent years—and Caterpillar has set the pace all along the line. Consider the new D6 Series B and new D4 Series C Tractors. In terms of work, both of these rugged units can do a lot more—not only mechanically—but from the standpoint of greatly increased operator efficiency. A comparison of your existing equipment with these work-styled machines might easily prove a new tractor would increase your output and profits far more than you imagi

Ask your Caterpillar Dealer to demonstrate th giant strides represented by these two new tracto Investigate the complete line of attachments that doub and triple their usefulness to you. See for yourself h the new D6 and new D4 can help you earn *all* the profi you should on your jobs!

Caterpillar Tractor Co., General Offices, Peoria, Ill., U.S.A.

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PROVED IN THE FIELD

The 68-ton base section of the cantilever rib was the heaviest lift and required two cranes. The Manitowoc is positioning structural steel for the tieback framing. In foreground, part of the structural steel is in place for the 125-foot-high movable tower of the 50-ton derrick that will erect steel for the higher portion of the dome.

forward or pulled by one of the cranes.

The cantilever arch girder supporting the dome leaves is composed of a curved double-box girder about 8 feet wide, 17 feet 6 inches deep, with a system of tie-back members extending from the anchorage point almost at the ground line to near the top of the box girder. This 1,400-ton girder is being erected in sections and will require a total of 3 temporary posts, one single-leg bent, and two double-leg bents, during erection. The heaviest lift on the job was made when the 68-ton base section of the arch rib was positioned on the main anchorage. This lift was handled by two cranes.

Each dome leaf will have seven 30-inch steel beams as ribs, with 10-inch and 8-inch purlins. The roof will have H. H. Robertson "Q" deck covered with rigid insulation, felt, and the stainless-steel surface.

Dome supports

The dome will have no interior supports. Its support will be the continuously supported (grouted) rails on the ring girder and the cantilever box girder. The beams will be spherically hinged on stationary vertical pins at the crown and mounted on wheels and steel tracks around the base. They will roll into a nested position, much as multiple-leaf rolling doors, to open three-quarters of the arena to the sky.

Personnel

H. Rey Helvenston is the resident engineer and superintendent of construction for the Public Auditorium Authority of Pittsburgh and Allegheny County, the project's developers. Helvenston is in charge of coordinating the work of eight separate prime contractors on the job and supervising construction.

Joe Alcorn is the superintendent, with William V. Winans and Fred Panto the assistant superintendents, for Dick Corp. W. R. Holmes is the superintendent for the American Bridge Division of U. S. Steel Corp., which is supplying the 3,500 tons of structural steel for the roof. There are three separate multimillion-dollar mechanical contracts on this job, aside from the steel contract and the general contract.

Mitchell & Ritchey, Pittsburgh, is the architect, and Ammann & Whitney, New York City, is the consulting engineer for the retractable steel dome, its motion, and its foundation. Robert A. Zern of Pittsburgh designed the structural elements of the 400-foot-diameter portion inside the ring girder, including seating and movable sections that uncover the stage for light-opera performances.

THE END

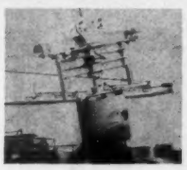
A Manitowoc places prefabricated ring girder forms over Beaver-Advance scaffolding. These are only the bottoms of the forms. A special steel template is required to form the top surface of the ring.

New crawler mounted Calweld Drills offer more!

More features... More digging power... More speed!

Check the features...

Hydraulic down pressure (50,000 lbs.) for faster digging in hard substrata.



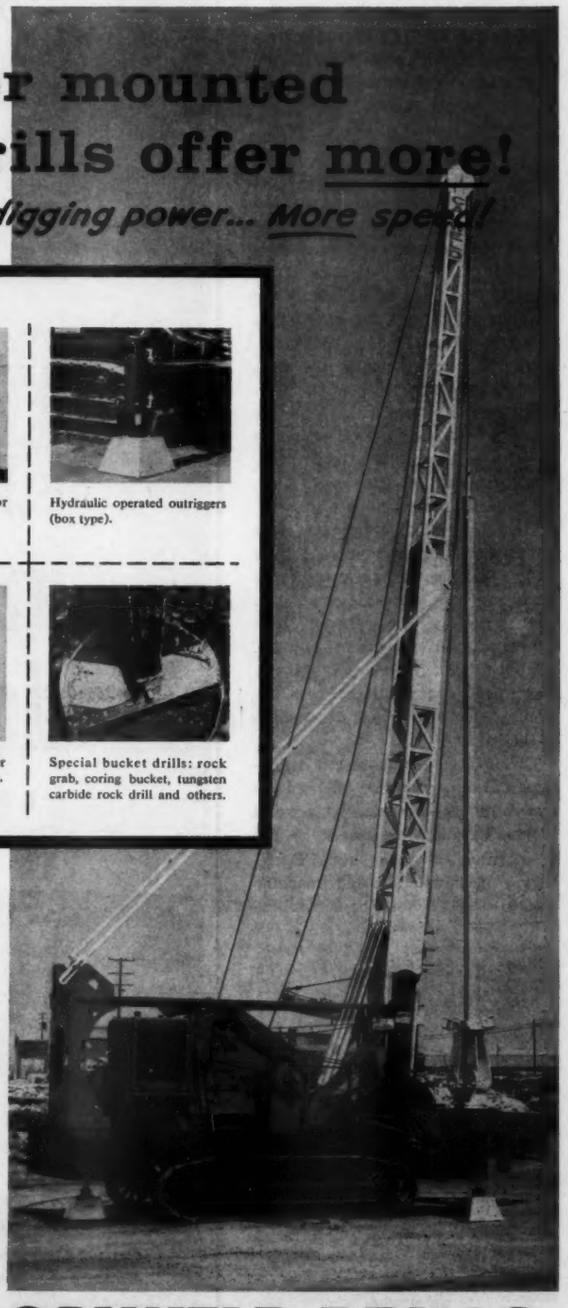
Hydraulic dumping arm for faster, safer dumping.

Hydraulic operated outriggers (box type).

50-ton capacity for pulling casings using hoist and crowder hydraulic rams.

Triple telescoping kelly bar for drilling to 90 foot depth.

Special bucket drills: rock grab, coring bucket, tungsten carbide rock drill and others.



In a class by themselves—Calweld Drills are BIG and do a *big* job—drill any size hole from 10 inches to 10 feet in diameter and 200 feet deep.

It's the contractor's drilling rig—because a Calweld does so many jobs—digs caisson pier holes, digs belled footings, pre-bores concrete piles, drills dry wells. Excellent for subsoil sampling and exploration.

Write for 16-page illustrated Methods Manual for job facts and figures.

CALWELD DRILLS

CALWELD, INC. 7222 E. Slauson Avenue
Los Angeles 22, California

For more facts, use Request Card at page 18 and circle No. 267

High-output concrete-batching setup for job on interstate route assures . . .

Good production with twin-paver spread

These two Koehring 34-E pavers keep up with plant output during paving of 8½ miles of North Carolina interstate. Crews put down half a mile of 24-foot slab in a 10½-hour shift.

Working on an interstate route, a high-output batching setup and a twin-paver spread put down half a mile of 24-foot-wide concrete pavement per 10½-hour workday. Clinchfield Concrete Co., Inc., Kingsport, Tenn., had the 8½-mile paving contract for the North Carolina roadway, which roughly parallels U. S. 64 and 70, from the Statesville, N. C., bypass to the Catawba River.

Paving spread

The contractor used two Koehring 34-E pavers riding outside of the forms along each shoulder. Both machines dumped their concrete batches in front of a 24-foot Blaw-Knox spreader that trimmed the mix to the required 9-inch slab thickness. This concrete did not require reinforcement. When reinforcing is needed, it is usual to work two spreaders; one trims the concrete so that reinforcing can be placed, and a second completes the slab to the desired thickness. A single spreader can also do the job, but it has to make two passes.

The Blaw-Knox spreader was equipped with a rear-mounted double-disk attachment that placed the transverse bars along the center line of the roadway. The transverse bars were supported by means of notches, cut out around the edges of the two disks, that assured the correct 30-inch spacing and proper penetration of the bars.

Two Jaeger double-screed transverse finishing machines followed the spreader to finish the slab surface and remove irregularities caused by the insertion of transverse bars. A Koehring longitudinal floating machine worked closely behind the pair of fin-

The 2-inch-deep longitudinal joint is cut down the center line of the roadway by a Champion portable saw using Champion diamond blades. The water tank on the truck, background, supplies the water for the sawing operations.

Behind Mr. Black his new 2¼ cu. yd. TD-15 Four-in-One is roughing out a new street with the earthrolling bulldozer action. He can compete with a dozer outfit—because the clam-action 4-in-1 can duplicate bulldozer performance, in capacity, range, and accuracy of control.

Power-shovel-like excavating force—applied with 4-in-1's super-powerful pry-over-shoe break-out action—enables the operator to heap 'er full, every pass, even in hard digging. The "15" can deliver 39,200 lbs. of break-out force!

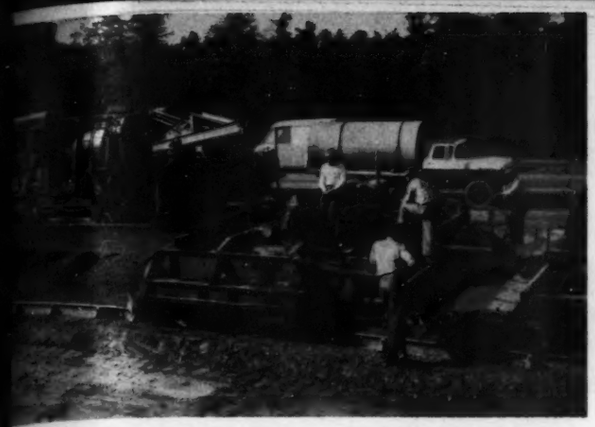
"Other rigs only 'doze, or grade, or loa

...my TD-15 Four-in-One does ALL...and more"

—T. P. BLACK, SR., CHEYENNE, WYOMING

To grade in cramped quarters—to load elusive loose materials without "chasing" them—the 4-in-1's operator simply uses a back-drag motion of the clamshell! Use this same action to do positive, self-clean-out bottom dumping—that eliminates the sticky materials problem.

Using carry-type scraper action, Mr. Black's 4-in operator grades with inch-close accuracy. Note how earth "boils in" to heap-load the 4-in-1 speedily. action can also be used to strip sod or topsoil—and controlled spreading, on-the-go!



◄ Concrete dumped by the Koehring paver is spread to the full 9-inch thickness by a Blaw-Knox spreader, which pulls an attachment that places transverse bars at the correct depth and spacing along the center line. A Jaeger transverse finisher follows.

A Blaw-Knox aggregate bin for stone, a second B-K bin for sand, and B-K silos for cement batching provide drive-through batching facilities for the haul trucks. ►

ishers to remove all the transverse ridges formed over the slab surface. At the rear of the paving train was a Heltzel spray machine that applied white-pigmented curing compound across the width of the slab surface. This allowed forms to be stripped the following day.

Joints formed

The hand-finishing crew behind the floating machine formed the contraction joints by inserting a 2-inch-deep×¼-inch-wide asphaltic-impregnated fiberboard into the concrete slab on 60-foot centers. Midway between these formed joints, the contractor used a portable Champion concrete saw to cut the 2-inch-deep×¼-inch-wide contraction joints.

The fiber fillers were used to form every other joint so that cracking would be controlled during the setting of the concrete. This work made it possible for intermediate joints to be sawed the following day.

Using Champion diamond blades, the portable saw also cut the 2-inch-deep×9/64-inch-wide center-line longitudinal joint. These blades had to be replaced after sawing about 3,000 linear feet.

Before the roadway was opened to traffic, the fiber fillers were sawed out and all joints pressure-filled with an asphaltic filler.

Forms and grade

Clinchfield had about 6,000 linear feet of Blaw-Knox 9-inch forms on the job and attempted to keep forms set 1,000 to 1,500 feet ahead of the pavers at all times. Form stakes driven by an air hammer set the form sections for the 24-foot slab width.

A Caterpillar No. 12 grader, pulling a 24-foot Cleveland planer, was used to grade and shape the subgrade between the forms. Cleveland Form Tampers followed to set the form sections securely to the subgrade.

A tractor-drawn Cleveland planer followed the form-tamping operation to obtain the design elevation of the subgrade. The grade was then rolled by a Galion tandem roller and wetted down ahead of the paving train.

Batch plant

The batch plant consisted of a Blaw-Knox aggregate bin for the No. 2 stone, a Blaw-Knox bin for sand, and Blaw-Knox cement silos and bin. Two Northwest cranes, one for each

←For more facts, circle No. 268

"I tried other machines;" reports T. P. Black, Sr., Cheyenne, Wyoming, "but they couldn't compare with the International Drott 4-in-1." Other rigs, he found, could either load, or do dozer work, or grade, only.

"The 4-in-1 can do all and much more," he adds. "We excavate, bulldoze, load trucks, do rough or final grading on roads, or landscaping. Our TD-15 and TD-9 Four-in-Ones are perfect for everything. I can't do without them in my business."

All four International Drott diesel-powered 4-in-1's give you the smoothness and wallop of high-torque 6-cylinder engines. The "15" Four-in-One is powered by the millions-of-hours-proved 115 hp, 6-cylinder International D-554 diesel. And the "15" gives you the cycle-speeding advantages of 6-speed full-reverse transmission—with "single-stick" shift and Shuttle-Bar forward-reverse control. Plus high efficiency, dry-type sintered metal clutch facings!

Why limit your income to what an old-style single-action loader, or any other limited-duty rig can earn you? See how each of the four, big-capacity 4-in-1 actions "doubles" for one or more special-duty machines—and each action gives you an amazing range of job-handling working positions. Compare exclusive shock-swallowing Hydro-Spring advantages, for positive, performance protection. Prove to yourself that only the clam-action 4-in-1 can upgrade you to multi-operation profits! Let your International Drott Distributor demonstrate.

International Harvester Company, Chicago 1, Illinois
Drott Manufacturing Corp., Milwaukee 15, Wisconsin

INTERNATIONAL®
DROTT®

A Cat No. 12 motor grader pulls a Cleveland planer between the forms to begin shaping the 24-foot-wide subgrade. The 9-inch Blaw-Knox forms were set 1,000 to 1,500 feet ahead of the pavers.

(Continued from preceding page)

bin, kept the sand and No. 2 stone bins fully charged from adjacent stockpiles.

Cement was delivered from a rail siding by truck tankers that charged the silos and bins through a hopper. screw conveyor, and bucket elevator. The bin and silos held about a rail car of cement.

Ford batch trucks, each with a 3-batch capacity, backed first under the stone bin to pick up 2,962 pounds per batch, then moved on to the drive-through-type sand bin, where each batch received 1,421 pounds of sand. The batch trucks then picked up 703 pounds of cement per batch at the drive-through cement bin. Approximately 2½ ounces of double-strength air-entraining agent was also added per batch to maintain 4 to 4½ per cent air in the concrete. The aggregate bins and the cement bin were manually operated.

George C. Bitner was the superintendent and R. E. Hawk, the assistant superintendent for Clinchfield Concrete Co. L. H. Beam was the resident engineer for the North Carolina State Highway and Public Works Commission. THE END

HRB bulletins on legal aspects of highway work

■ The Highway Research Board has issued two bulletins. Special Report 50, "State Constitutional Provisions Concerning Highways: A Legal Analysis," discusses highway administration, acquisition of property, finance, intergovernmental relations, internal improvements, suits against the state, miscellaneous provisions, and local, special, or private laws.

"Land Acquisition: 1959," Bulletin 232, contains a report of the committee on land acquisition and control of highway access and adjacent areas; a review and some new thinking on control of highway access; and a method of measuring changes in the value of residential properties. The concluding papers are a verbatim report of a panel discussion on highway planning and protection in Wisconsin.

Each bulletin is priced at $2.40. Both may be purchased from the HRB, 2101 Constitution Ave., Washington 25, D. C.

P&H appoints manager

■ Karl H. Rathmann has been appointed product advertising manager for the Construction and Mining Division, Harnischfeger Corp., Milwaukee. His duties will include creating and producing product promotional materials for both domestic and export advertising programs. He will also coordinate the division's export advertising program with its agency.

Lincoln Electric news

■ Jean J. Revelt has been named public-relations assistant by The Lincoln Electric Co., Cleveland. He was formerly welding engineer in the company's Milwaukee district.

Clinton Engines names Reed a new director

■ Clinton Engines Corp., Clinton, Mich., has appointed Melvin A. Reed industrial-relations director to supervise all industrial-relations activities at the company's home plant and those in Maquoketa, Iowa.

Nick Natiello continues as industrial-relations manager at the Clinton plant, and Neale McDonald remains in the same post at Maquoketa.

ALL OVER THE U.S.A., CONTRACTORS

power-steer and power-shift wi

NO ATTACHMENT! NO AFTER-THOUGHT! NO "STOP-GAP

Exclusive, years'-proven combined Planet Power-steering and Hi-Lo power-shifting are designed-in, built-in, basic standard equipment of the new 230-hp International TD-25!

Simplified TD-25 design is the only planetary system engineered and located to give you the dual advantages of "live track" steering and on-the-go shifting!

"Live track" Planet Power-steering eliminates load-limiting "dead-track drag"—gives power to pull full loads on turns, as well as on straight-aways. On-the-go, Hi-Lo power-shifting does away with time-wasting "gear-shift lag"—lets you match power to load instantly for full-speed cycles!

No wonder the new TD-25 can outearn king-sized clutch-steered crawlers up to 50%—on push-loading; land-clearing; overburden removal; benching; "mass-production" dozing; ripping; other tough jobs!

New TD-25 seven-roller tracks are strength matched to the full effort of the new 230-hp diesel engine. "25" is platformed on super-rugged double-box frames—and is smoothly carried on International dual-protected Dura-Rollers, the track rollers make 1,000-hr lube intervals practical!

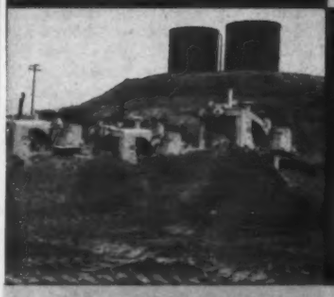
Power-shift and power-steer the "25" with [illegible] sized loads—around curves, upgrade, anywhere. Compare the advantages of getting this exclusive performance, and getting it from years'-proven standard equipment. Prove what's behind the "25's" rise to nationwide contractor acceptance. Let your International Construction Equipment Distributor demonstrate!

Though "out-rated" 105-hp by a king-sized, clutch-steered competitor, this nimble TD-25 proves able to outwork "the big one"—side-casting and benching to build Pacific Northwest mountain logging roads!

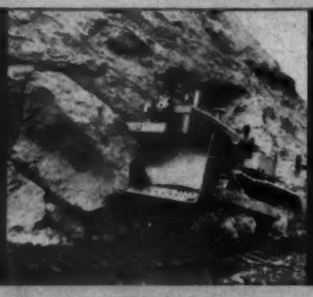
International Construction Equipment

International Harvester Co., 180 North Michigan

A COMPLETE POWER PACKAGE: Crawler and Wheel Tractors... Self-Propelled Scrapers and Bottom-Dump Wagons... Crawler and Rubber-Tired Loaders... Off-Highway Haulers... Diesel and Gasoline Engines... Motor Trucks... Farm Tractors and Equipment



Three new International TD-25's of contractor V. E. Posey's fleet team up to prepare homesites from a mountainside—near San Diego, California. Dual-valving of the "25's" direct-start DT-817 engine provides for peak turbocharging efficiency—to deliver full-rated performance, from sea level to timberline!



Cleaning the face of a Missouri strip mine behind a big dragline, this TD-25 pushes "tractor-sized" boulders aside with the greatest of ease. This "25" also builds dragline walkways and haul roads—and drastically cuts land-clearing costs for Peabody Coal Co.

For cycle-speeding push-loading, TD-25 power-shifting helps give "feather-touch" contact; maintains solid push-block contact on curves; gives gear-to-gear kick-outs than ordinary. The two "25's" tandem pushing the International 295 Payscraper®, and the [illegible] one ripping, belong to superhighway contractor Bentley, Sylacauga, Alabama.

Developed by the U. S. Army Corps of Engineers, this 20-ton-capacity rough-terrain crane is designed for a variety of applications, including operation in 4 feet of sea water. Special features are 30-foot strut boom, on-highway speeds up to 30 mph, and ability to turn inside a 30-foot-radius circle and climb 40 per cent grades.

Rough-terrain crane developed by the Corps

■ A 20-ton-capacity rough-terrain crane is now under test at the U. S. Army Engineer Research and Development Laboratories at Fort Belvoir, Va.

The crane is designed for use in military construction projects calling for clamshell, dragline, steel-erection, and bridge-assembly work. Weight of the basic crane, with 30-foot strut boom, is held to about 50,000 pounds. It is expected to be able to travel the highways under its own power at speeds of 30 mph; climb 40 per cent grades at a speed of 2.25 mph; negotiate 10 per cent side slopes; and, by using maximum front and rear steering, turn inside a circle with a 30-foot radius.

One of its unique features is a special system that permits the inflation and deflation of the four tires while the vehicle is standing still or in motion. Air pressure can be varied between 10 and 85 pounds. Hydraulic motor-driven outriggers, permanently located on the carrier, are lowered to help stabilize the crane when it lifts maximum loads. Mounted on a specially designed diesel-driven off-highway type of carrier, the crane is capable of operating without support equipment for sustained periods of time on and off the highway. It is even equipped with a dozer blade, with limited capabilities, to permit the machine to function independently of other construction machinery on the clearing and leveling of its own work site.

The crane on the carrier is mounted on hook rollers and is powered by a diesel engine. Equipped with a 30-foot strut boom or a 30-foot gooseneck boom, and three 20-foot insert sections, it is fully revolving. Additional counterweights are provided for operation with a 90-foot boom. Using the 30-foot boom and outriggers, the unit can lift 10 tons at a 20-foot operating radius. It has a 25,000-pound drawbar pull.

The prototype crane was built by LeTourneau-Westinghouse Co., Peoria, Ill., under contract with the Army laboratories. The superstructure was manufactured by American Hoist & Derrick Co., Fort Wayne, Ind.

Allis-Chalmers transfers

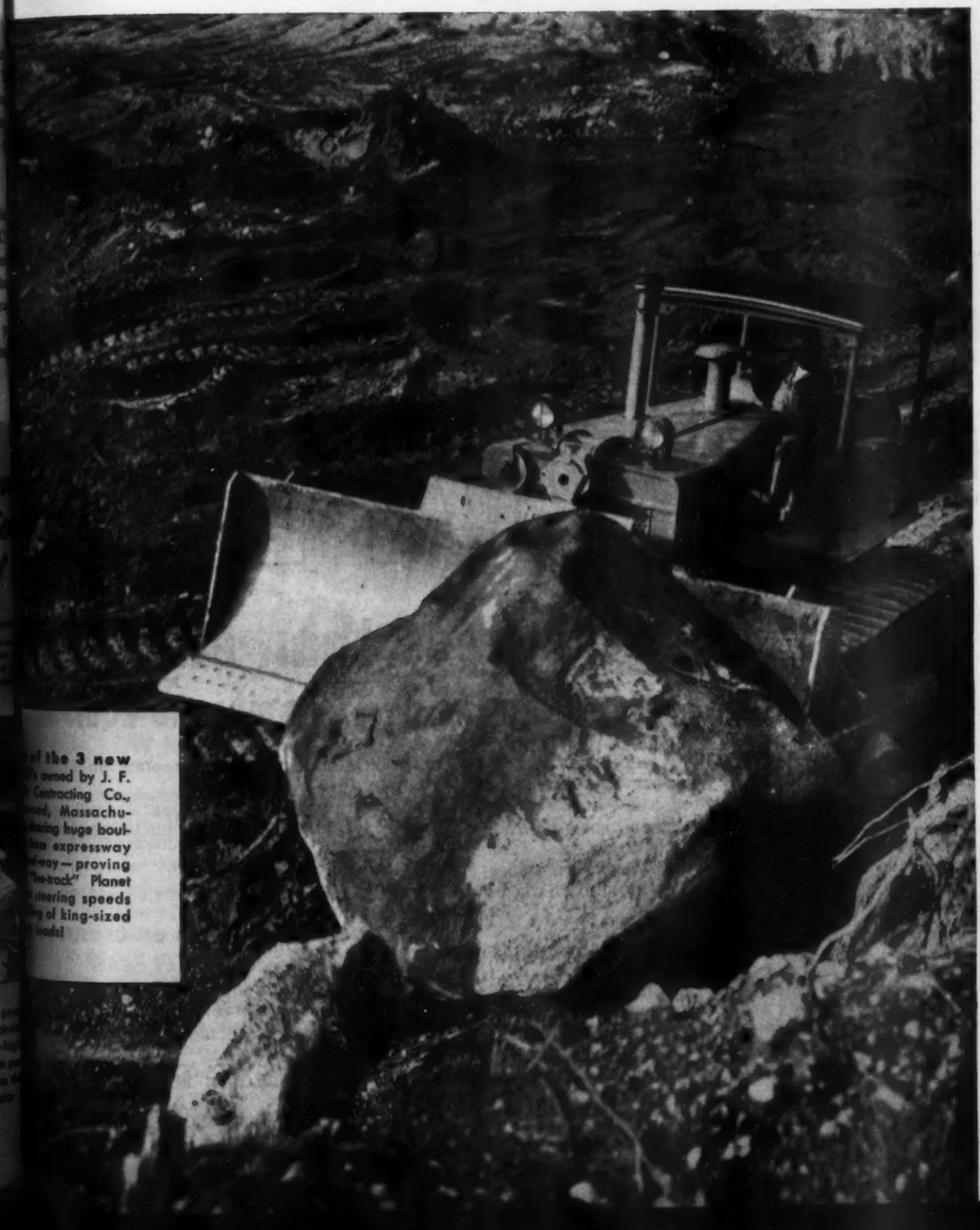
■ Three service representatives have been added by the Allis-Chalmers Mfg. Co.'s Construction Machinery Division service department at the training center in Springfield, Ill. They are T. V. Hicks, G. O. Languell, and C. E. Love. They serve as field service representatives, training center instructors, and service instructors on mobile training units.

L. B. Foster Co. assigns

■ Three new sales representatives have been added to the New York City office of L. B. Foster Co., Pittsburgh. Howard R. Elliot will handle construction products and rail and track accessories; Andrew Z. Koi and Carl M. Duede will specialize in pipe, valves, and fittings.

←For more facts, circle No. 269

with TD-25 standard equipment!



of the 3 new
owned by J. F.
Contracting Co.,
Massachu-
huge boul-
expressway
way—proving
"on-track" Planet
steering speeds
of king-sized
loads!

A new twist in public relations

Open house at The Cornelius Co., Albuquerque, for civil engineering students at the University of Mexico is part of the firm's public-relations program. Headquarters house shops, parts rooms, offices, and display space.

Tractor track for an Allis-Chalmers HD-21 is disassembled by workmen with a Rodgers Model 20D stationary track press. The press quickly knocks the track pins loose so that they can be removed by workmen.

In an unusual program conducted in cooperation with the Civil Engineering Department of the University of New Mexico, The Cornelius Co., Albuquerque equipment distributor, helps give the civil engineering students at this Southwestern university a true picture of the function and importance of the equipment distributor in construction, mining, logging, and related industries.

The program, sponsored by the student chapter of the American Society of Civil Engineers, includes lectures at the college and open-house meetings at the Cornelius Co. headquarters. As many as 160 students in a group spend a full evening in this distributor's shops, where they see a parade of the latest equipment, watch moving pictures of construction and related activities, and listen to talks by prominent contractors and others in the pertinent industries.

During the open-house meetings, the students have a chance to examine the equipment closely and to ask questions of Cornelius employees, who willingly turn out en masse for these special occasions.

Items of particular interest at these meetings are movies of construction work in New Mexico taken by members of the Cornelius staff. These 16-mm color movies are being produced as a lasting record which will show personnel and equipment, as well as some details of specific projects.

The movie project is still in its infancy, but Cornelius intends to continue adding footage from year to year. Later the film will be assembled, edited, and supplemented with some type of explanation, probably in sound. It is hoped that this film will eventually become a

HOE digs up to 34" width with half-yard

MEET YOUR HEAVY DUTY

It costs less than any othe

Only MITI-MITE gives you all these features as STANDARD EQUIPME

You don't pay extra for P&H engineering advantages that give the Miti-Mite its exceptional stamina and ruggedness. Listed below are but a few of the many STANDARD features that pay off in higher production, lower operating cost. Let your P&H dealer show you all the reasons why the Miti-Mite can go on more jobs and stay on the job when the going gets extra rough.

STANDARD FEATURES ON UPPER

- Power raising and power lowering planetary-type boom hoist.
- Exclusive P&H Power Box Design with line-bored 1" steel side-stands seals roller chain drive and all transmission machinery in an oil bath. All shafts are *INVOLUTE* splined and operate on *anti-fric* bearings.
- 4-speed transmission (2nd gear normal operat speed). 1st, 3rd and 4th gears offer job and produc versatility.
- 360° total-vision cab.
- "Direct feel," positive P&H hydraulic controls.

STANDARD FEATURES ON CARRIER

- All new, *current production*, 6 x 4 carrier
- Modern, "straight-through" type drive
- 10 speeds forward—2 in reverse
- 8:25 x 20-10 ply, non-directional mud and snow tire

HARNISCHFEGER P&H

Milwaukee 46, Wisconsin

Cornelius has a special diesel laboratory where fuel pumps and injectors are overhauled and calibrated. The technician is mounting an overhauled pump in the American Bosch fuel-injection calibrating stand.

W. H. Cornelius, president of the firm, boards his twin-engine Piper Apache airplane for a flight to a customer's job location. The 4-place plane is used to take company personnel on many trips to job sites throughout the Mountain states.

historical record of New Mexico construction.

Founded in 1937 by W. H. Cornelius, Sr., the firm was first known as The Harry Cornelius Co. With the advent of World War II, Cornelius sold the young business and accepted a commission as lieutenant colonel in the U. S. Army, where he served throughout the hostilities.

At the close of the war in 1945, he returned to Albuquerque and re-established an equipment distribution company. A few years later, in March, 1949, the firm was granted the New Mexico distributorship for the Allis-Chalmers line. This marked a major advance in the company's development. Cornelius died within a week after the new acquisition, but his son, W. H. Cornelius, Jr., took over the reins and continued the expansion program his father had just begun.

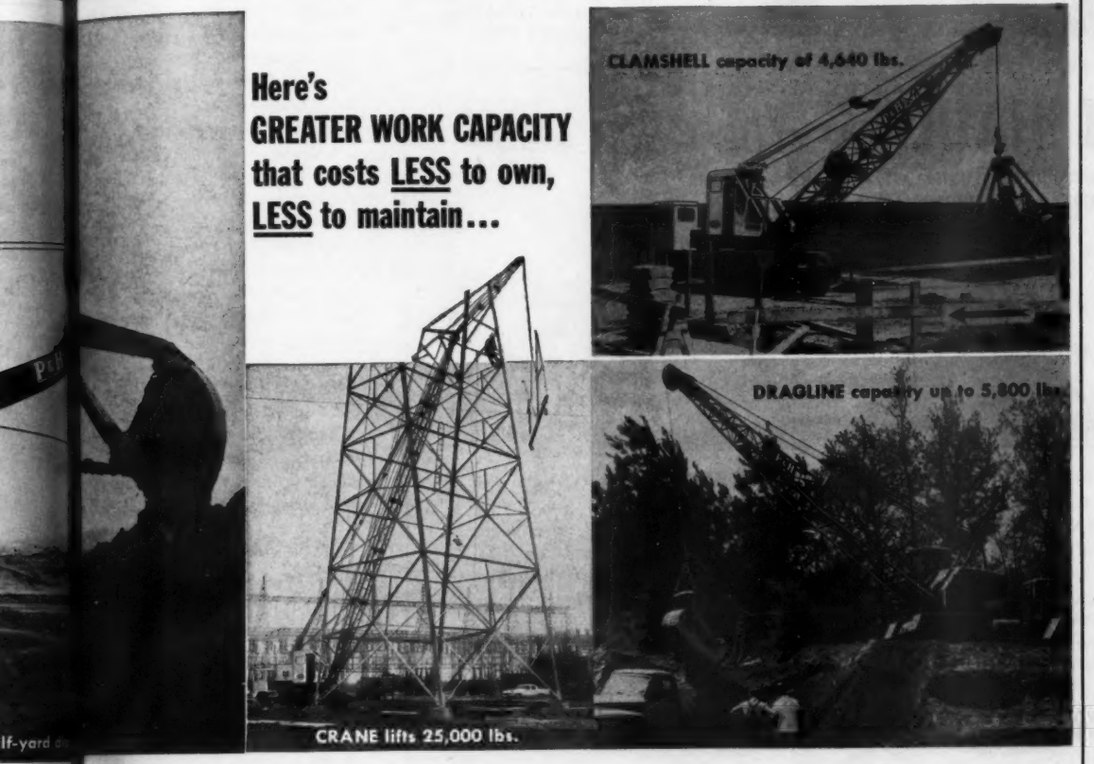
Today, Bill Cornelius carries on in the footsteps of his father—heading a lively, growing distributor organization. In addition, he finds time to lend his services to the Associated Equipment Distributors; last year he served as director of Region 14, which includes Colorado, Utah, Wyoming, and New Mexico.

When the expansion program started, the company had only a dozen employees and shared a not-too-large building with a trucking firm. Today The Cornelius Co. has nearly 80 employees and is housed in a modern building with some 40,000 square feet of floor area. This building and outdoor yards for new and used equipment occupy more than a city block. In addition, branches have now been opened in Farmington and Roswell, N. Mex.

In addition to the Allis-Chalmers line, some of Cornelius' exclusive accounts include: Koehring Division, Joy Mfg. Co., C. S. Johnson Co., Universal Engineering Corp., Kwik-Mix Co., Parsons Co., Pettibone Wood Mfg. Co., Schield Bantam Co., Rosco Mfg. Co., Gorman-Rupp Co., Bros, Inc., Clyde Iron Works, Inc., and many others.

For most of these accounts Cornelius' territory includes the state of New Mexico and the "four corners area" of Utah, Colorado, and Arizona. This is a large area which has resources and potential just beginning to be realized.

The big white masonry building, which is headquarters for the firm,



MITI-MITE 12½ TON CAPACITY

uck Crane of its size

Bigger Profits on Countless Jobs a LOW, LOW Initial Investment

tanding adaptability to many jobs makes the Y DUTY MITI-MITE a real money maker . It's small enough to move quickly from job yet has the power, speed and durability to work ntinuous peak efficiency that gets the job done d time. Attachments can be changed on the b, quickly and without special tools.

he MITI-MITE in action to evaluate its full otential for you. Stay competitive, investigate nt that builds solid profits for you—write or r an on-the-job demonstration.

THE LOW PRICE TAG on this high production truck crane will interest you. Call your P&H distributor or mail coupon below to receive information about the 12½-ton P&H 105B-TC MITI-MITE in your area. No obligation, of course.

Harnischfeger Corporation
4400 West National Avenue
Milwaukee 46, Wisconsin

☐ Yes, I would like to know how much a MITI-MITE would cost for my job. Also please send descriptive literature.

☐ Yes, I would like to see the MITI-MITE in action. Please contact me for an appointment to see a demonstration.

Name_____ Title_____

Company_____

Address_____

City_____ Zone____ State_____

+-For more facts, use coupon or circle No. 270

For more facts on insert, use ... circle No. ...

(Continued from preceding page)

In the spacious showroom, a Kwik-Mix mortar mixer and Clayton Summeraire heater are effectively displayed. In the background are general offices and, above them, the accounting office.

houses shops, parts rooms, offices, display space, and related facilities. A substantial part of the structure is occupied by the shops.

Outside the entrance to the general shop is a wash rack where thick dirt can be removed before a machine enters the building for repairs. From the wash rack, a machine moves into the steam-cleaning room, where a Clayton steam cleaner is used to remove the remaining grease and grime.

The clean machine then moves into the main shop area to be dismantled and overhauled. Four overhead cranes in the shop area are equipped with Comet 2-ton electric hoists to simplify and speed the handling of heavy parts. Similar cranes are also located in the steam-cleaning room and in the welding shop.

Along one wall of the main shop is a track-repair section. Here, a Rodgers Model 20D stationary track press rapidly assembles or disassembles tractor tracks. For moving tracks and other heavy units around the shop, a Hyster Karry Krane with a capacity of 5 tons proves very useful.

Track rollers and other parts that need welding or building up go to the company's welding shop. A positioner rotates the rollers while a Lincoln semiautomatic Squirt-Welder applies the beads of new metal. This machine is powered by a Lincoln 600-amp generator. The welds are made with 3/32-inch Lincoln L-rod and H535 flux. After the rollers have been built up to specification dimensions, the centers are bored out to receive the bearings. Other miscellaneous welding is done with the aid of Lincoln 250-amp welding generators.

Engine overhaul

One large corner of the shop area is used for engine overhaul. The engines are removed from the machines and transported to this shop by the overhead cranes. Skilled workmen with all of the necessary special and regular tools can handle anything from minor adjustments to complete overhaul in this shop.

The precision jobs of repairing, overhauling, and testing diesel fuel injection systems are handled in a specially equipped diesel laboratory. An American Bosch fuel-injection calibrating stand aids the laboratory technician in the delicate testing and adjustment of the pumps and injectors. This laboratory is supplied with specially filtered and conditioned air to keep out dust and lint.

When the machines have been repaired or overhauled, they are taken back out of the shop to an area in the yard and placed on a test stand and/or dynamometer. After testing, they go to the paint department. Here, they are repainted to give them a new exterior to match the newly reconditioned internal parts.

Realizing that field service is probably most important to the customer, Cornelius maintains a well equipped field-service rig, manned by an experienced field mechanic. The five Chevrolet and one Ford service pickup are all equipped with Powers Service-Master bodies for carrying tools, parts, service manuals, etc.

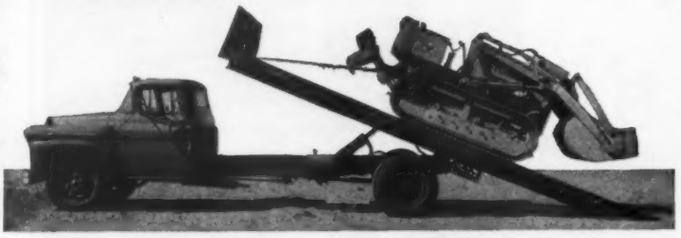
Each field service man carries a

EQUIPMENT HAULING—the easy way!

HAUL MEDIUM WEIGHT CONSTRUCTION EQUIPMENT, PORTABLE BUILDINGS, TOOLS, AND MACHINERY EASILY AND ECONOMICALLY.

SCHWARTZ

RAMP HOIST
WITH WINCH



- Fits all trucks 84" to 154", cab to axle.
- Hydraulically operated with controls at the side of the ramp.
- Mounts without removing truck frame cross member.
- Load rating—up to 12 tons.
- Rugged power hydraulic winch operated off truck power take-off.
- Available with wood or steel platform with steel approach plate and steel cab protector.
- Hinge point located over rear spring shackle for better stability and less stress on truck frame.

AVAILABLE ALSO IN HEAVY DUTY MODELS FOR TANDEM AXLE TRUCKS

SCHWARTZ MAKES IT A **ONE-MAN** JOB!

Now, with a SCHWARTZ RAMP HOIST, *one man* can load, transport, and unload those hundred and one pieces of equipment that do not justify the use of heavy duty low-boy trailers. With the ramp lowered, both mobile and other equipment can be winched onto the ramp and safely transported. The low cost of the SCHWARTZ RAMP HOIST will be quickly paid for in savings on time and labor.

WRITE TO DEPT. RH-20 for complete information.

SCHWARTZ MANUFACTURING COMPANY
Lester Prairie, Minnesota

For more facts, use Request Card at page 18 and circle No. 271

THE NEW HANCOCK ELEVATING SCRAPER

(Shown on John Deere 840 Tractor)

FORCED EJECTION • LARGER TIRES • NEW DRIVE
HEAVIER • MORE CAPACITY

Take advantage of these new features that are time and money savers for you! Forced ejection saves you operating time and manpower by providing a positive — controlled dump. Larger tires make the heavier, improved scraper more maneuverable. New, improved drive means heavier loads with less horsepower than ever before . . . 7½ yard and larger capacities. The new Hancock Scraper can be pulled with either the 830 or 730 John Deere, or similar industrial tractor, with front wheel dolly; or by direct connection to tractor. For "Engineered" help with your earth moving problems, contact Hancock today!

HANCOCK MANUFACTURING COMPANY
PO 3-8297 P. O. BOX 1359 LUBBOCK, TEXAS

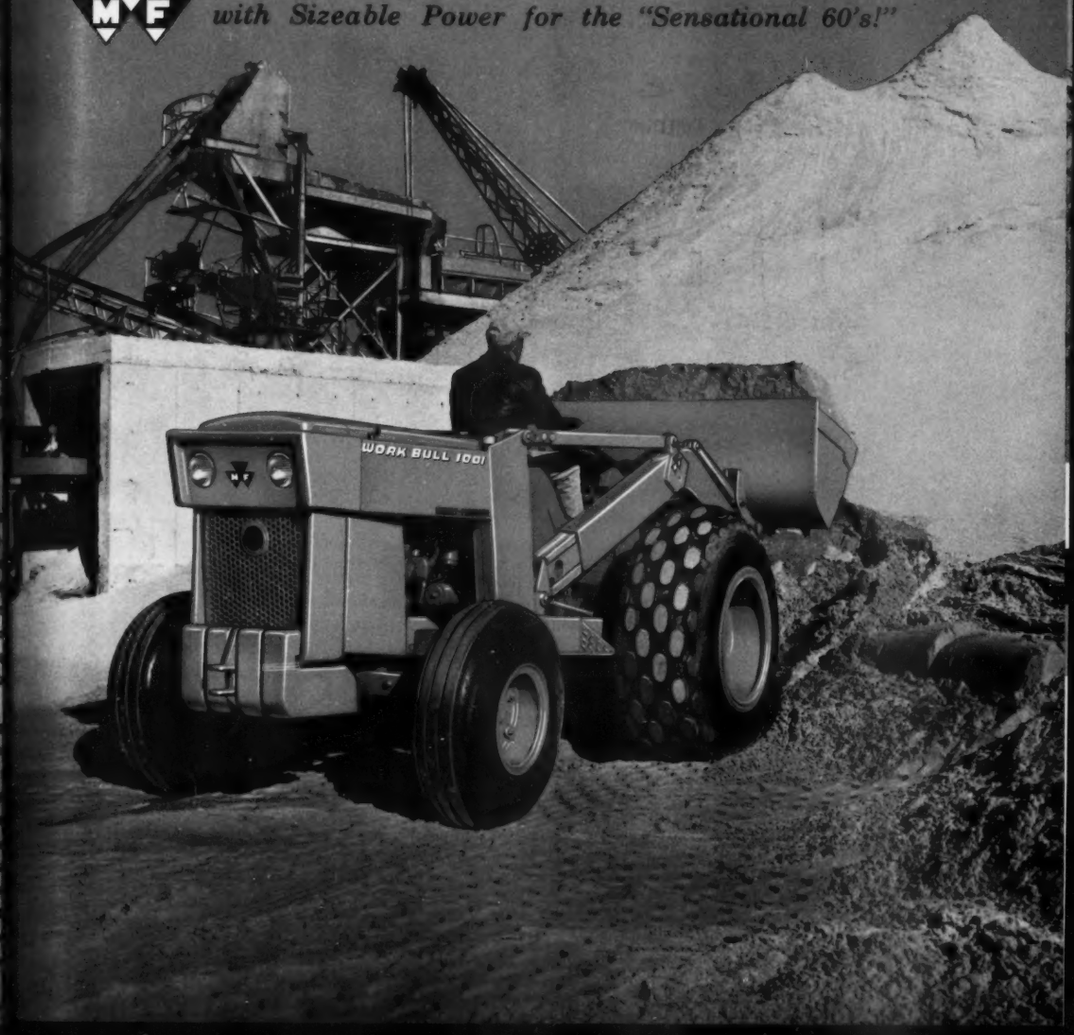
For more facts, use Request Card at page 18 and circle No. 272

Big-Job Performance...at Small-Job Economy

MASSEY-FERGUSON
INDUSTRIAL EQUIPMENT
answers,

"HAVE DONE... CAN DO!"

with Sizeable Power for the "Sensational 60's!"



COMPARE THE "CAN DO

THE MASSEY-FERGUSON 1001 IS NOW AVAILABLE WITH SUPER HIGH-FLOTATION, LOW-PROFILE TIRES TO GIVE GREATER TRACTION IN SOFT, SANDY, OR ROUGH TERRAIN.

IMPROVES LOADING ABILITY

BY 50%

The rugged-versatile Massey-Ferguson 1001 Shovel Loader is now available with extra-large, high-flotation tires which increase its efficiency in soft or rough terrain and provide greater traction for faster loading. This 1-cu.-yd. (SAE rated) Shovel Loader has proven time and again that it CAN outperform more expensive, single-purpose machines. Massey-Ferguson's Instant Reverse lets it move in and out with ease and speed that bulky, larger machines can't match. Direct line thrust from pivot point to bucket tip, 36° rollback at ground and 46° at 3′ carry utilize its 9300-lbs. pryout capacity to get heaped loads and keep them. Telescopic reach (124″ at hinge point) and 51° dump angle let it dump high and clean. A variety of quick-change attachments (see chart on opposite page) give it multi-purpose utility right on the job site.

ABILITY OF THESE MASSEY-FERGUSON TRACTOR SHOVELS AGAINST ANY IN THE FIELD!

EXCLUSIVE **INSTANT REVERSE** with TORQUE CONVERTER

GETS YOU IN AND OUT IN SECONDS . . . WITHOUT SHIFTING

Massey-Ferguson's exclusive Instant Reverse lets you move forward or back at a touch of the toe. You change directions of travel instantly and smoothly without shifting or clutching. Acceleration and direction are controlled by the same pedal — one for forward, another for reverse. Speeds are equal in each direction. Instant Reverse is by far the greatest time-saving, fuel-economizing, maneuverability feature available today for construction and industrial machinery.

The MASSEY-FERGUSON 406 HAS UNEQUALLED VISIBILITY — FRONT AND REAR . . . SUPERIOR MANEUVERABILITY AND MAXIMUM VERSATILITY

This 1-cu.-yd. (SAE rated) Tractor Shovel also has Instant Reverse, direct line thrust, and telescopic reach. Operator's control zone is positioned for excellent visibility at any angle. It has big-machine performance with small machine economy and agility. In addition to numerous front-end attachments, the 406 is also designed to accommodate the famous Massey-Ferguson Backhoe.

Why Wait? Make a Date — We'll Demonstrate!

POWER-MATCHED ATTACHMENT FOR the MASSEY-FERGUSON 1001 and 406

- [illegible] (1-cu. yd. SAE rated) bucket
- [illegible] (¾-cu.-yd. SAE rated) bucket
- Ram Pick-up Street Sweeper
- Ram Leaf Loader
- Angle Dozer
- Swinging Crane
- Scarifier
- Lift Fork
- Ram Rotary Snow Blower (1001 only)
- Ram Blacktop Spreader (1001 only)
- Rotary Backhoe (1001 only)
- Massey-Ferguson 185 or 220 Backhoe (406 only)

Please send me more information on the following Massey-Ferguson Industrial Equipment.

___ Massey-Ferguson 202 Industrial Tractor ___ Massey-Ferguson 204 Industrial Tractor
___ Massey-Ferguson 406 Tractor Shovel ___ Massey-Ferguson 1001 Tractor Shovel
___ Massey-Ferguson 65 Utility Tractor

Attachments ___ M-F Loader ___ Street Sweeper ___ Auburn Trencher
___ M-F Backhoe ___ Rotary Broom ___ Scarifier-Scraper
___ Blacktop Spreader Other_____

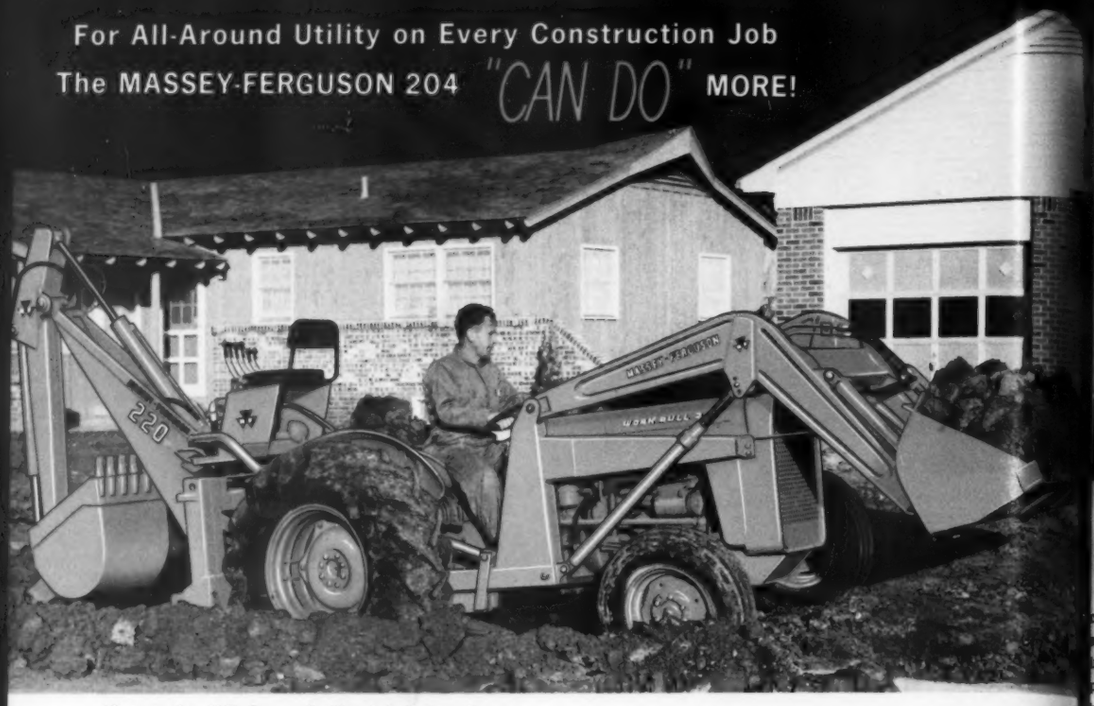
NAME_____

ADDRESS_____

TOWN_____ STATE_____

For All-Around Utility on Every Construction Job

The MASSEY-FERGUSON 204 "CAN DO" MORE!



the only 40 h. p. industrial tractor

with INSTANT REVERSE and Torque Converter

The Massey-Ferguson 204 with Instant Reverse never gets cornered . . . never slows down . . . works as fast in reverse as it does going forward. It's the most compact, versatile, and maneuverable industrial rig on the construction site. Ideal for landscaping, clearing, backfilling, stockpiling, loading, or lifting. The popular Massey-Ferguson Loader and Backhoe are power-fitted to the 204 for an integrated package. A full range of attachments is available including the four-in-one tool — Scarifier-Scraper, and the Multi-purpose Blade. This is one machine that really CAN DO more work faster than any other tractor in its class!

MASSEY-FERGUSON BACKHOE PROVIDES GREATER VISIBILITY AND VERSATILITY THAN ANY OTHER

The Massey-Ferguson 220 Backhoe really has the "CAN DO" spirit. It lets you bid and make a profit on more digging jobs. With 14,000# breakout power it digs through frozen ground or blacktop. It also will dig flush alongside walls, fences, or buildings. Hydra-slide positioning shifts the digging assembly to flush left or right hydraulically. Operator's seat and controls are always directly in line with bucket wherever you are digging or dumping.

Why Wait? Set a Date—We'll Demonstrate!

For Complete Details

Send this Coupon to

MASSEY-FERGUSON INDUSTRIAL DIVISION
Block 1000 South West Street
Wichita 13, Kansas

MF 60-12

Before this Allis-Chalmers tractor-dozer is brought into the shop for overhaul, it is thoroughly cleaned. All machines have thick dirt removed at a wash rack outside before they are steam-cleaned.

A Hyster Karry Krane with 5-ton capacity is a versatile work horse around the yard. It is bringing a heavy tractor track into the shop for overhaul. The rig also moves other heavy units around the shop.

Six field-service trucks are kept in operation by Cornelius. The service man with this Chevrolet is assembling a special pulling jig for use with hydraulic pullers that handle almost any pulling operation.

complete set of service manuals for all equipment he expects to service in the field. These occupy a complete compartment of the Powers body. In addition to the mechanic's chest of common tools, each rig is equipped with a complete set of hydraulic pullers with attachments to handle practically any pulling operation. Other compartments carry minimum quantities of standard materials like bolts, tubing, gasket materials, welding rod, etc., and a few standard, commonly needed parts. These items are held to a minimum so that the trucks can carry a full complement of special tools without being overloaded.

Other equipment on each truck includes an oxyacetylene welding set, a spare can of gasoline, and an Igloo water can. Each of the rigs has a mechanic's vise attached to the tail gate.

All of these service trucks are equipped with telescoping A-frames and Coffing hoists, which can pick up loads up to about one ton. The heavy tubing arms that make up the A-frame are attached to swivel mounts at the rear of the Powers bodies, with heavy box sections carrying the load down to the truck frame. A special hook attaches the two arms together and provides the loop for hanging the hoists. A special high-strength chain runs from the top of the A-frame to an anchor in the bed of the truck just behind the cab.

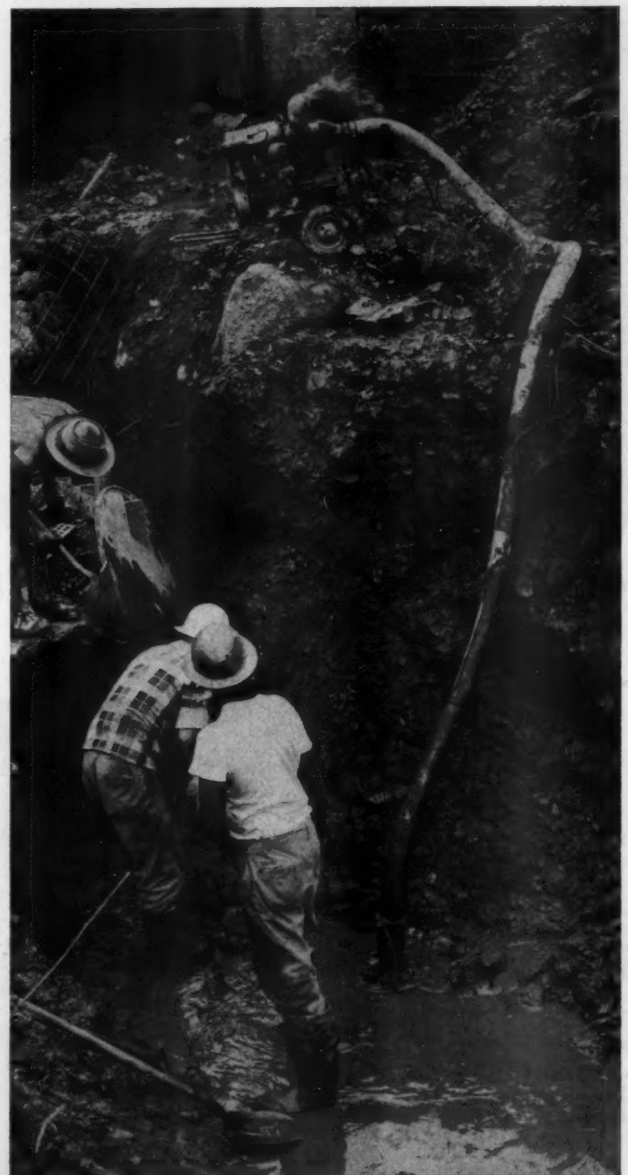
Some of the service trucks are currently equipped with 110-volt AC generators which operate from the truck engine and supply power for lights and small tools.

In addition to the service pickups, Cornelius operates one larger service rig. This is a Chevrolet 6500 truck fitted with a Leland special oil-field body and a Spencer-Safford Load-Craft 28-foot flat-bed trailer. In addition to its ability to load and haul rigs weighing up to 26,000 pounds, this truck also can assist with repair operations.

It is equipped with a Gar Wood winch powered from the truck engine and has a rear-mounted A-frame that can be extended up to a height of 16 feet. It can handle

(*Continued on page 46*)

HANDLE THE TOUGHEST PUMPING JOBS WITH EASE!



Gorman-Rupp

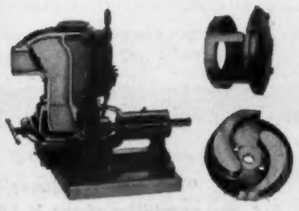
EXTRA HEAVY DUTY

Pumps for Contractors

Completion dates . . . equipment failure . . . bad weather . . . water problems . . . headaches that harass as you push to get the job done. You just can't afford to have trouble.

Dependability takes on its full meaning when these rugged Gorman-Rupp Pumps are on the job. Simple design, rugged construction—and the performance, even under brutal treatment, is completely reliable. You know you can keep the toughest jobs going with these extra heavy duty units.

See these pumps at your Gorman-Rupp Distributor. They're built to serve you for years.



Fast-Action End Plate—Exclusive Design. Releases for access to impeller and renewable wearplate. Two-vane open impeller handles solids.

160 GPM MODEL 12B2	350 GPM MODEL 13A2	600 GPM MODEL 14A2	1400 GPM MODEL 16A2

THE GORMAN-RUPP COMPANY

305 BOWMAN STREET • MANSFIELD, OHIO

GORMAN-RUPP OF CANADA, LIMITED

ST. THOMAS, ONTARIO

For more facts, use Request Card at page 18 and circle No. 274

4 Huge Model H-120 "PAYLOADER" Units Were Selected For The Job

"The better balance, speed and maneuverability of the H-120 makes it a better buy than larger competitive models tested on this job," says Charles E. Young, Job Superintendent.

SPEEDS ORE-HANDLING OPERATION

for Armour Excavating, Inc.

Armour Excavating, Inc. is one of the contractors that has expanded its operations into the ore-handling field. Its share of such work has increased with the rapid growth of the Port of Philadelphia as an important iron ore handling center.

The Pennsylvania Tidewater Dock Co., at Pier 122 South, has a 4-crane ore dock capable of unloading 6,000 tons of ore an hour, which the Pennsylvania Railroad transports in cars to a number of steel mills in this part of the country. They have areas available for the ground storage of between 3 and 4 million tons of ore, the ground having been previously prepared by Armour.

One phase of Armour's ore-handling work consists of loading railroad cars with the various types of ore which have been stockpiled along miles of track. This work has been greatly expedited by the recent purchase of 4 Model H-120 "PAYLOADER" units from M-W EQUIPMENT CO., Division of Metalweld, Inc.

These "PAYLOADER" units pick up the ore from the stockpile, carry it to the track and load it directly into railroad cars. Their speed and mobility enable them to travel over this site in a few minutes. In addition, they move loaded cars along the track and bring in empty cars to be loaded. No other equipment is needed for this entire operation.

Joseph Keenan, an operator, says, "I like the H-120 better than anything I've run. It's faster, comfortable and easy to handle. The balance is perfect and the safety and visibility is tops, because of the lift arm design. The high lift and long reach let me center the loads in the gondolas as the railroad demands with this heavy ore."

The Model H-120, conservatively rated at 12,000 lbs. operating capacity, is the largest of the "PAYLOADER" line of 20 models in 8 capacity ranges. Your Hough Distributor with his complete parts and service facilities, backed by Hough field service personnel, invites your inquiry. See him today.

The "PAYLOADER" units need no 'dozer or other assistance in the loading operations, because they also do their own towing and car spotting, dozing, stockpile trimming and clean-up work.

HOUGH®

THE FRANK G. HOUGH CO.
LIBERTYVILLE, ILLINOIS
SUBSIDIARY — INTERNATIONAL HARVESTER COMPANY

HOUGH, PAYLOADER, PAYMOVER, PAYLOGGER and PAY are registered trademark names of The Frank G. Hough Co., Libertyville, Ill.

THE FRANK G. HOUGH CO.
762 Sunnyside Ave., Libertyville, Ill.

☐ Send data on Model H-120 "PAYLOADER"
☐ Send data on smaller "PAYLOADER" sizes

Name.....

Title.....

Company.....

Street.....

City.....State.....

2-B-1

Distributor Doings

An Allis-Chalmers 6G tractor shovel is loaded onto the Spencer-Safford Loadcraft trailer on the Chevrolet 6500 in the yard. This truck, with special Leland oil-field body and Gar Wood hoist, frequently helps on field-service work. It carries an A-frame that is capable of lifting 5 tons.

(*Continued from page 43*)

lifts up to about 5 tons. Larger low-bed trailers are rented through regular trucking services to haul pieces of equipment too heavy for this rig.

Warranty service

For machines on warranty, field service supervisor J. B. Crosthwait usually plans three periodic inspections. At the scheduled times, he drives or flies to the customer's job site and makes a thorough inspection of the machine in cooperation with the master mechanic on the job. If service is necessary, he attempts to schedule it so that one of the regular field service men can do the work in the course of one of his planned trips. Emergencies, of course, are serviced immediately.

On some special occasions, a service man may be stationed on a customer's project, especially where a sizable spread of equipment has been sold and is on warranty. This was the case at Navajo Dam, where the joint-venture general contractor purchased 12 Allis-Chalmers HD-21 tractors and three A-C 45 motor graders.

Under normal conditions, four of the service men work out of the Albuquerque headquarters while the others operate from the Farmington and Roswell branches. This keeps the service men and their equipment within close range of most of the customers' work sites.

Being located at a considerable distance from the factories of most of the suppliers, The Cornelius Co. provides an additional service for its customers by carrying an exceptionally large and complete line of spare parts. The normal parts stock is valued at close to a million dollars—which means that Cornelius' customers seldom have to wait for a shipment from the factory.

In the parts room, modern steel racks, bins, and shelves are rapidly replacing the wood facilities that had to be improvised during the period of rapid expansion immediately after the war when steel equipment was not available.

Of vital importance in the handling of this huge parts stock is the Visirecord inventory system installed during the past year. With this system, 30,000 cards in six tubs carry a complete record of the parts stock. Assistant parts manager R. J. Eglinton and his three assistants keep this system of records right up to the minute.

Judicious purchasing of parts, aided by the Visirecord system, enables this parts department to maintain a good turnover of inventory which results in a profitable operation for the company, as well as providing excellent service to the customers.

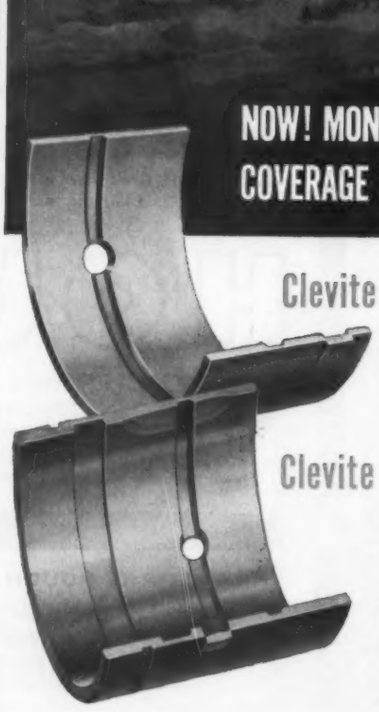
Teletype communications speed and facilitate the handling of parts and supply orders. One closed-circuit teletype system connects the Albuquerque office with the two branch locations. This provides immediate communication between the branches and the parts control center.

Airplane speeds transportation

Cornelius service does not stop with fast communication. Rapid transportation is also provided through the company's Piper Apache twin-engine airplane. This four-place ship, equipped with two Lycoming 160-hp engines, has a cruising speed of about 155 mph. In normal operation, it cruises at 8,000 to 12,000 feet, and is equipped with oxygen for safety and comfort at the higher altitudes.

The plane enables a salesman to visit customers at remote locations

NOW! MONMOUTH OFFERS COMPLETE ENGINE BEARING COVERAGE TO THE CONSTRUCTION FIELD



Clevite 77 BEARINGS

CLEVITE 77, with patented cast copper lead tri-metal construction, proyides greater load carrying capacity, longer life.

CLEVITE 77 (the bearing preferred by O.E.M.) saves time and money with more hours of service, lower maintenance costs.

Clevite ALUMINUM BEARINGS

Now! A full line of Steel Backed and Solid Aluminum bearings (identical to original equipment in design and materials) is available for ALL special earthmoving equipment.

A complete range of undersizes will give you up to four regrinds, extending crankshaft life.

The coverage, availability and service you receive from your NAPA Jobber makes it easy for you to use the best —CLEVITE—from the world's leading original equipment manufacturer.

For your nearest jobber, contact one of the NAPA warehouses listed on opposite page

MONMOUTH *Engine Bearings*

CLEVITE SERVICE: Cleveland Graphite Bronze • *Division of Clevite Corporation* • Cleveland 3, Ohio

For more facts, use Request Card at page 18 and circle No. 276

without spending hours on the road between stops. The service men frequently use it to get to and from contractors' job sites for the inspection of machines that are on warranty or are to be overhauled.

Occasionally, the plane delivers a vital part to keep a customer's spread running. In one instance, a call was received at the Albuquerque office at 3 o'clock in the afternoon, telling of a breakdown of a vital machine in a contractor's spread. The necessary part was on hand in the parts department. In a very short time, the part and a service man were in the air on their way to the job site. By 6 o'clock — 3 hours later — the repair had been completed and the machine was back in operation. The trip would have taken 24 hours by pickup.

Employees of The Cornelius Co. all seem to take pride in their work and in the company. They work together as a team. For example, the six service men work hand in hand with the sales force in developing sales potentials.

A factor in the high morale is the regular job training which most steady employees receive. Allis-Chalmers and other manufacturers conduct service schools in Cornelius' shops for the mechanics and service men and occasionally a few customers' master mechanics. All regular mechanics go to the factory schools for training and go back from time to time to learn new techniques or study new models. The sales force, too, goes to sales and operating schools conducted by Allis-Chalmers and other manufacturers.

The high employee morale is evidenced by the response to special activities. When the University of New Mexico engineering students were invited to attend an open house at the plant, the employees went to work with enthusiasm and cleaned the place until it sparkled.

On the night of the open house, practically every employee was on hand. Some of them, in clean white coveralls, paraded the equipment before the group and then stood by to answer questions and make demonstrations. Others pitched in wherever there was anything to do to make the event a complete success.

Personnel

Heading The Cornelius Co. is its energetic young president Bill Cornelius. With his wife, daughter, and two sons, Cornelius lives in a beautiful country home north of Albuquerque. Here he engages in his hobby of raising cattle, horses, and dogs. All of the family enjoy riding, and the horses get plenty of exercise.

In addition to president Cornelius, the staff includes E. W. Crist, Jr., vice president; Homer Anderson, general manager; Neal Wiggans, sales manager; O. E. Smith, service manager; and Doyle Poff, parts manager. Managers of the Farmington and Roswell branch stores are L. E. Hubbard and Lucian Pigott, respectively. Field service supervisor is J. B. Crosthwait, and shop foreman is W. E. Timmons.

THE END

New vice president for M-W Equipment Co.

Walter T. Senkowski has been appointed vice president of M-W Equipment Co., a division of Metalweld, Inc., Philadelphia. Formerly manager of contractor and industrial sales, Senkowski will now direct the operation of all departments of M-W.

Koehring Division names

Critzer Machinery Co., 106 Sheldon Road, Berea, Ohio, has been appointed a distributor for northern Ohio by the Koehring Division, Koehring Co., Milwaukee. The dealer will sell and service the complete line of Koehring construction machinery.

B-E distributor adds

Seabrook Machinery, Inc., 625 W. Gaines St., Tallahassee, Fla., and 1402 S. Slappey Drive, Albany, Ga., has added Hydrocrane machines to its line of excavating and crane equipment that it distributes for Bucyrus-Erie Co., South Milwaukee.

Simplex names four to carry its line

Simplex Forms System, Inc., Rockford, Ill., has appointed four to handle its line of forms and accessories. Southern Spanall, Inc., 1129 N. E. Seventh Ave., Fort Lauderdale, Fla., will cover that state, Georgia, and Alabama. The company has offices and warehouse facilities in Tampa, Orlando, and Winter Park, Fla.

Empire Equipment Co., Buffalo, N. Y., will serve western New York State and northwest Pennsylvania. Daniel-Olsen Building Products, Inc., 522 N. Main Ave., Sioux Falls, S. Dak., will handle the eastern part of the state and bordering counties in Minnesota and Iowa. Doyle Yockers, d/b/a Builders Products, 1825 Dover Drive, Salina, Kans., will cover the Salina area.

Hyster changes dealer

C. Jim Stewart & Stevenson, Inc., Houston, has assumed the exclusive dealership for the complete line of industrial trucks of Hyster Co., Portland, Ore. This change was brought

(*Continued on next page, col. 4*)

Monmouth

ENGINE BEARINGS

NAPA Atlanta
200 Baker Street, N.E.
P. O. Box 6006, Station H
Atlanta, Georgia

NAPA Birmingham
500 South 23rd Street
Birmingham 2, Alabama

NAPA New England
325 Vassar Street
Cambridge 39, Mass.

NAPA Buffalo
1330 Main Street
Buffalo 9, New York

NAPA Charleston
410 56th Street, S.E.
Charleston 31, West Virginia

NAPA Charlotte
2711 Wilkinson Boulevard
Charlotte, North Carolina

NAPA Chicago
525 West 35th Street
Chicago 16, Illinois

NAPA Cleveland
1458 East 55th Street
Cleveland 3, Ohio

NAPA Columbus
245 Grandview Avenue
Columbus 8, Ohio

NAPA Dallas
1719 North Harwood
Dallas 1, Texas

NAPA Denver
P.O. Terminal Box 5386
Denver 17, Colorado

NAPA Des Moines
12th & Mulberry Streets
Des Moines 9, Iowa

NAPA Detroit
101 Seldon Avenue
Detroit 1, Michigan

NAPA Fresno
646 L Street
P. O. Box 1026
Fresno 1, California

NAPA Grand Rapids
323 Ionia Avenue, N.W.
Grand Rapids 2, Michigan

NAPA High Point
P. O. Box 5029
Richmond, Virginia

NAPA Hawaiian
747 Ilaniwai Street
P. O. Box 1599
Honolulu 6, Hawaii

NAPA Houston
1717 Pierce
Houston 3, Texas

NAPA Indianapolis
424 North Illinois Street
P.O. Box 635
Indianapolis 4, Indiana

NAPA Jacksonville
1090 Haines Street
Jacksonville 1, Florida

NAPA Kansas City
2701 Main Street
Kansas City 8, Missouri

NAPA Los Angeles
6900 East Washington Boulevard
Los Angeles 15, California

NAPA Louisville
Brooks & Jacob Streets
P. O. Box 180
Louisville, Kentucky

NAPA Memphis
801 East Georgia Avenue
Memphis 2, Tennessee

NAPA Miami
104 N. E. 13th Terrace
Miami, Florida

NAPA Milwaukee
767 N. Jackson Street
Milwaukee 2, Wisconsin

NAPA Minneapolis
50 Spruce Place
Minneapolis 3, Minnesota

NAPA New Orleans
855 Baronne Street
New Orleans 13, Louisiana

NAPA New York
517 West 59th Street
P. O. Box 318
Radio City Station
New York 19, New York

NAPA Oakland
401 27th Street
Oakland 12, California

NAPA Oklahoma City
700 South Western
Box 1821
Oklahoma City 4, Oklahoma

NAPA Omaha
2027 Harney Street
Omaha 2, Nebraska

NAPA Philadelphia
1600 Hunting Park Avenue
Philadelphia 40, Penna.

NAPA Phoenix
324 West Adams Street
Phoenix 1, Arizona

NAPA Pittsburgh
5620 Penn Avenue
Pittsburgh 6, Penna.

NAPA Portland
3241 N. W. Industrial
Portland 10, Oregon

NAPA Richmond
1302 MacTavish Avenue
Richmond 20, Virginia

NAPA Salt Lake City
28 S. W. Temple Street
Salt Lake City 1, Utah

NAPA San Antonio
710 Broadway
San Antonio 5, Texas

NAPA San Diego
1123 Island Avenue
P. O. Box 829
San Diego 12, California

NAPA San Francisco
25 Division Street
San Francisco 3, California

NAPA Seattle
2700 4th Avenue, South
Seattle 4, Washington

NAPA Spokane
126 South Sheridan Street
P. O. Box 1444
Spokane 6, Washington

NAPA St. Louis
3301 Locust Street
St. Louis 3, Missouri

NAPA Syracuse
345 Peat Street
Syracuse 3, New York

Your NAPA Jobber is a Good Man to Know!

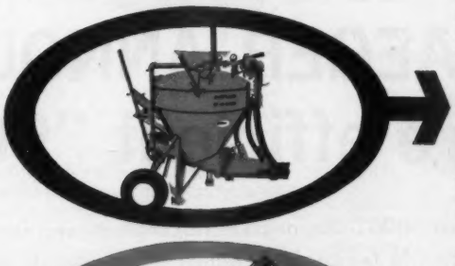
YOU GET SO MUCH MORE FROM

AIRPLACO

THE ONLY COMPLETE LINE OF PNEUMATIC CONCRETE PLACING EQUIPMENT

More versatility . . . more efficiency . . . more economy . . . more jobs done better, faster and easier. That's what you can expect from Airplaco equipment. From the simplest concrete repair or restoration job to the largest construction project, Airplaco equipment means more profit to you.

AIRPLACO BONDACTORS AND NUCRETORS. With five models to choose from, you can gun concrete at any rate from ½ to 8 cu. yd. per hour. Airplaco guns are adjustable to a variety of materials including concrete, refractories and insulating concretes. There is an Airplaco gun just right for your needs.



AIRPLACO CONCRETE PLACERS. The new, low-cost way to place and distribute structural concrete. Two models give you production range up to 30 cubic yds. of material per hour. Concrete is conveyed through lightweight placement tubing to any point on the job. Serves equally well in grouting operations. Save many man hours with this flexible new method.

AIRPLACO MIX-ELVATORS. Automatic proportioning, mixing and elevating equipment. Three models deliver up to 12 cu. yds. of mix per hour. One model has built-in aggregate dryer that reduces moisture content of sand. Teamed up with an Airplaco gun, the Mix-Elvator gives you a most efficient and mobile gunning rig.

Let Us Help You Solve Your Concrete Problems

Our experience in solving unique problems involving the handling of concrete has saved thousands of dollars for others. This experience is available to you. Write, wire or phone us, anytime.

WRITE FOR FREE CATALOG

THE AIRPLACO LINE ALSO INCLUDES: CONCRETE GROUTERS—JET-BLASTER (wet or dry) SANDBLASTERS — Complete Line of Hose, Nozzles and Accessories

AIR PLACEMENT EQUIPMENT CO.

1007 WEST 25TH STREET • KANSAS CITY 8, MO.

WORLD'S LEADING MANUFACTURER OF "ADVANCED DESIGN" PNEUMATIC PLACING EQUIPMENT

For more facts, use Request Card at page 18 and circle No. 277

MUD FAILS TO BOG DOWN construction of a $350,000 addition to the South Muskego high school in Wisconsin. The Kwik-Mix Hi-Lifter that does most of the material handling on the job wades right in to hoist brick and block to a second-story platform. The rig is also used to handle steel sheeting and lumber and, with hopper attachment, to place concrete.

JAEGER ANNOUNCES a more efficient "900" rotary

» The first "900" that delivers full capacity at a fuel-saving, engine-saving 1700 rpm . . . using the same GM 6-110 diesel which others operate at 1800. Your fuel factor is more than 500 cfm delivered air per pound of fuel consumed. *Ask your Jaeger distributor for details — or send today for complete catalog of Jaeger rotary air compressors.*

ON THIS TYPICAL ROCK JOB with two 4½" crawler-drills, the Jaeger "900" maintained 100 psig at the drills while never running faster than 1500 rpm. That's efficiency, that's fuel economy, that's long life.

THE JAEGER MACHINE COMPANY, 701 Dublin Avenue, Columbus 16, Ohio

PUMPS • MIXERS • TRUCK MIXERS • PAVING MACHINES

For more facts, use Request Card at page 18 and circle No. 278

distributor doings

(*Continued from preceding page*)

about by Stewart & Stevenson acquiring Collier-Hile Co., the former Hyster dealer in Houston. The new Hyster dealer will cover the south Texas area.

Hyster has realigned its industrial truck leadership areas in southwest and south central Ohio. Handling, Inc., Columbus, is the new addition. The dealer's territory is part of the area formerly maintained by the Bode-Finn Co., Cincinnati. Bode-Finn retains its original coverage in southwest Ohio. Both dealers cover portions of north Kentucky.

Handling, Inc., has also acquired the services of sales, parts, and service personnel formerly with the Columbus branch of Bode-Finn.

Highway Trailer names

Lanier Truck-Trailer Service, 8[illegible] Merida St., San Antonio, has been appointed a distributor for the complete line of commercial trailers produced by Highway Trailer Co., Edgerton, Wis. The dealer will cover the south central section of the state.

Daybrook appoints

Weston Dump Body Co., 326 S. 11th St., Des Moines, Iowa, has been appointed sales and service representative for the compete line of truck equipment manufactured by Daybrook Hydraulic Division, Young Spring & Wire Corp., Bowling Green, Ohio.

New Euclid dealer

Harris-Euclid, Inc., 3900 Cliff Ave., Highway 77 North, Sioux Falls, S. Dak., has been appointed a dealer for the Euclid Division of General Motors Corp., Cleveland. The dealer will carry the complete line of Euclid earthmoving equipment for the entire state.

Parker-Hannifin names

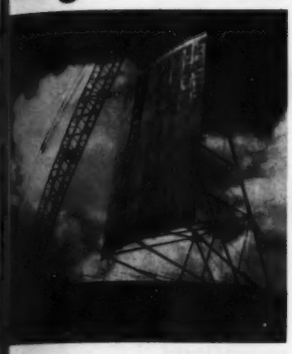
Parker Fittings & Hose Division of Parker-Hannifin Corp., Cleveland, has two new distributors. C & E Rod Tool & Supply Co., 2007 First St. N. W., Albuquerque, N. Mex., will handle industrial tube and hose fittings. Sturgis Valve & Fitting Corp., 601 S. Taylor Ave., St. Louis, will carry industrial tube fittings, tube-working tools, industrial hose, and re-usable Hoze-lok fittings.

Kwik-Mix names dealer

The Excavating & Paving Equipment Co., McCorkle and 55th Sts., Charleston, W. Va., has been appointed a distributor for the Kwik-Mix Co., division of Koehring Co., Port Washington, Wis. The dealer will handle the complete line of Kwik-Mix products in West Virginia with the exception of four northern counties and five in the eastern section of the state.

AGGREGATE PRODUCTION is a big job for runway construction at Glasgow Air Force Base, Glasgow, Mont. Minus 3-inch select subbase is produced in the plant at left. The Kolman 48-inch conveyor has a double-deck vibrating screen at the end. Oversize goes to the right of the truck; the waste, minus ¼-inch, goes to the left for stockpiling by the D8. Water is added to the subbase material at the bin before the mix falls to the truck. In the photo at right, hot-mix is turned out by a Cedarapids G-60 plant with 6,000-pound-batch pugmill.

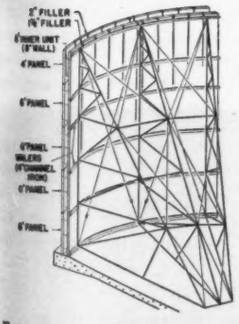
Weight 4 Tons



New Use for Symons Steel-Ply Forms

28' Circular Walls Ganged for Sewage Plant

Friebel & Hartman, Shelby, Ohio contractor, with the use of a crane was able to strip and reset 2,300 square feet of forms on inside gang section in 3½ hours. And 8 men in less than 8 hours erected 2,300 square feet of forms and scaffolding on outside plus pouring the concrete. The project was the Mansfield, Ohio Sewage Treatment Plant, which consisted of four digestors.



Four ganged sections were used—each 22 feet wide and 28 feet high. This allowed pouring ⅓ of a tank at a time, and a pour every four working days. Weight of each ganged form was about four tons. A ¾ yard Lorain with an 80' boom handled the sections.

Complete story on the Ohio Sewage Treatment Plant will be sent FREE upon request. Symons Forms may be rented with purchase option.

Symons

SYMONS CLAMP & MFG. CO.

4259 Diversey Ave., Dept. B-0, Chicago 39, Ill.

Warehouses Thruout the U.S.A.

MORE SAVINGS FROM SYMONS

For more facts, circle No. 279

Yale & Towne news

■ George A. Wulf has been appointed manager of the Philadelphia materials-handling sales and service branch of the Yale Materials Handling Division, The Yale & Towne Mfg. Co., Philadelphia. This branch covers the Middle Atlantic territory.

Vice president John A. Baldinger will take over the responsibilities for all the company's domestic and foreign materials-handling equipment operations. He will have headquarters in New York City. Baldinger succeeds Elmer F. Twyman, who retired. Clyde R. Dean takes over Baldinger's former duties as general manager of the Yale Materials Handling Division.

Charles J. Jacobus, chief engineer, and Herbert L. Orwig, development engineer, of the Trojan Division, have been awarded a $1,000 prize in the third annual Machine Design Award Program sponsored by The James F. Lincoln Arc Welding Foundation. A fifth-place award went to the Trojan engineers for the design of the main frame and lift arms of the Trojan Model 304 tractor shovel.

Norman R. Amberg, former works manager, has been promoted to plant manager at the division's headquarters plant.

Clark Equipment assigns

■ William E. Kane has been named Eastern district representative for the Michigan line of construction and bulk materials-handling equipment produced by the Construction Machinery Division, Clark Equipment Co., Benton Harbor, Mich. He will be responsible for Michigan equipment sales in the metropolitan areas of New York and Philadelphia, and the state of New Jersey.

Cut costly stripping & resetting time with these

NEW FORM HANDLING FRAME*

Strips and repositions both side forms in one quick smooth action. Pulls and resets sections 50-foot or longer with ease.

NEW Form-Crete STEEL FORMS

The new forms and handling frame shown on this page were developed for one specific reason—to help you cut your operating costs. Each feature, the form-locks, the tilt-back, and the handling frame was fully tested under working conditions for many months. In every test, the results were the same—faster stripping and resetting of forms. Get the full story. Clip the coupon below and ask your local Form-Crete man for full details.

NEW CHANNEL FORM WITH FORM LOCK

Locked in perfect alignment during casting operation, the sides of this form flex out when locks are released allowing quick removal of product.

NEW SQUARE PILING FORM WITH FORM LOCK

Form-Lock feature locks sides in perfect alignment for pouring. When locks are released, sides flex away from product for easy stripping.

NEW TILT-BACK OCTAGONAL PILING FORM

Easily removed braces permit hinged form to swing away for quick removal of cast product.

*Patents applied for

PF-18

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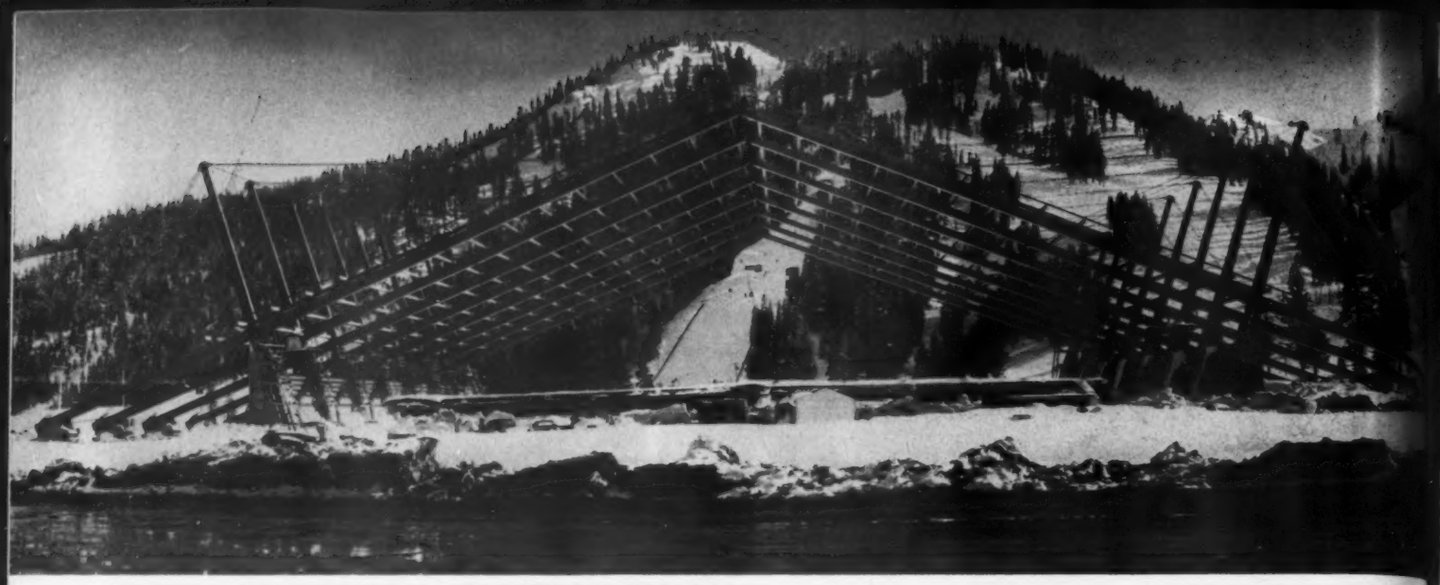
For more facts, use coupon or Request Card at page 18 and circle No. 280



This unique ice arena, constructed at Squaw Valley, Calif., for the Winter Olympics will have a grandstand separate from the rest of the structure. The roof operates as two halves; a roof cap seals the opening at the peak. Each half consists of eight tapered box girders anchored to concrete piers and extending 157 feet to the peak. Girders also extend 79 feet to anchorages. Three 2¼-inch strands from the 60-foot-high steel columns on piers hold the girders. Three cables connect the tops of columns with the anchorages.

A novel ice arena for winter olympics

Huge arena is constructed in three sections; roof halves shelter separate grandstand

Skaters skimming over a huge indoor oval of artificial ice and skiers racing down the mountainsides will attract thousands to the VIII Olympic Winter Games at Squaw Valley, Calif., this month.

The colorful international pageant and games also mark the culmination of more than two years of construction that transformed the ancient summer camping grounds of the Washoe Indians into one of the world's outstanding winter sports areas.

The focal center of the complex is the unique arena with its cable-suspended roof spanning 300 feet over the indoor ice rink and seats for 4,5[illegible] spectators. On the opening and closing days of the games, one end of the arena will swing open to give an unobstructed view of the 400-meter [illegible]

Concrete piers and the first stages of the grandstand structure are being formed at this point. The plywood and lumber forms are tied with Richmond form hardware. Clusters of eight piles support each of the 16 main piers, which rise 33½ feet from the ground. Anchor piers have five piles designed to resist the uplift due to the load applied by the cables.

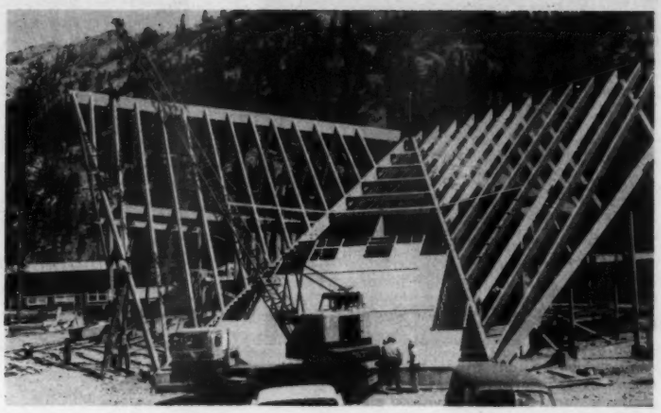
A 50-ton P&H holds a 60-foot steel column in place while workmen make the attachment to the pier. The columns, in cross section, are similar to two crossed I-beams. The backleg of the roof girder extends outside the building to the hold-down anchor.

(Additional photo on front cover)

The 157-foot girders are erected in two sections. The 67-foot section is attached to its cable and raised until the pin connection is made at the base of the column; then the girder is lowered and purlins are placed. Crews now will set 90-foot-long sections on a falsework so that remaining cables can be attached and the girder section raised into place.

One of the final jobs was installation of the cellular-steel roof decking. Cells in the decking will be used for circulating warm air to melt snow from the roof of the structure.

This is the architect's model of the new Squaw Valley ice arena, 400-meter speed-skating oval, and two ice-hockey rinks. Temporary bleachers in the infield of the speed-skating oval are for spectators who will view the opening and closing ceremonies for the Winter Olympics.



The two spectator centers are as unusual as the ice arena in design. The Bucyrus-Erie 11-B crane on a CCC carrier is erecting prefabricated timber sections for one of these buildings while workmen apply the plywood sheathing. In addition to food and souvenir concessions, the structure will have a large central fireplace.

skating oval immediately in front of the structure and the ski-jump area on the nearby mountainside.

At the far end of the area, the Olympic Village provides dormitory, feeding, and recreational facilities for the participating athletes from 34 nations. Other buildings in the complex provide for spectator conveniences and administrative necessities. A major element of construction was the installation of utilities, including water-supply, sewerage, telephone, and electric power. Roads and bridges were also built.

The work was done under a series of contracts with a large number of contractors participating either as prime or subcontractors. The contracts were awarded by the California State Olympics Commission, using funds provided by a federal grant and state grants from California and Nevada.

Arena is unique

The arena was built by Diversified Builders, Inc., Paramount, Calif., under a $7.5 million contract that also provided for the construction of the skating rinks and many incidental facilities. The designers of the structure were Corlett & Spackman and Kitchen & Hunt, Architects Associated. Structural engineers were H. J. Brunnier and John M. Sardis.

Measuring approximately 224×300 feet inside, the arena presents a striking appearance, even amid the spectacular scenery provided by the valley and its surrounding mountains. The design is highly practical, too, since it provides amply for the heavy snow loadings that must be anticipated in this area. Although the roof system includes provisions for melting snow, it is designed for a snow load of 50 pounds per square foot.

The roof, which spans the 300-foot dimension of the arena, actually functions as two separate structures since the halves are not really connected at the peak. Sliding closing plates at the peak maintain the alignment of the rafters from the two sides throughout movements due to expansion, contraction, and changes in loading. A telescoping roof cap seals the opening against the weather.

Each half of the huge roof consists

(*Continued on next page*)

NYGEN-BUILT

GENERAL TIRES

keep your units moving full steam hour after hour... job after job...

Whether it's sand, mud or the rockiest grade... the General Tire keeps rolling to keep projects on schedule. With exclusive Nygen-cord construction, the General Tire defies the worst job hazards while its heavy, husky tread provides traction beyond comparison. You get maximum flotation, minimum rolling resistance, too! That's why the tough-built General Tire keeps going whatever the going! See for yourself on your next job!

THE GENERAL TIRE & RUBBER CO. Akron, O.

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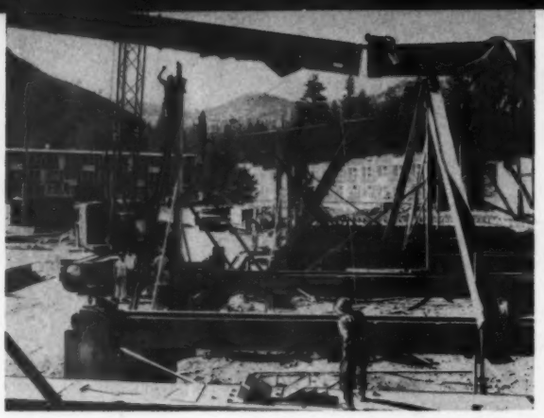
After the entire roof frame has been placed, crews, working from a scaffold, grout the connection to a concrete pier for the structure.



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of eight tapered box girders, anch... to the concrete piers at the edge... the arena and extending 157 feet... the roof peak. Each of these gird... is suspended on three Roebling 7... inch bridge strands from 60-foot-h... steel columns on the piers. One end... strands is attached to a point 61 f... out from the pier, while the other h...

One of the glued-laminated wood girde... for the roof of a building in the Olympic... Village area is set in place by a Lorain 3... ton motor crane. Some of the dormito... buildings, background, near completion.

The concrete columns of the grandstand are formed with plywood panels backed by 2×4's and tied with column clamps. The workman is tightening the adjusting nut of the steel strap clamps. The final tension is applied with a wrench.

Jerry Payton, erection superintendent for Pittsburgh-Des Moines Steel Co., holds one of the scissorlike devices, composed of steel flats, which will adjust the Squaw Valley arena building's ridge-line weather cap to uneven loads. The top portion will bolt into steel angles forming the ridge cap; the bottom plates will be bolted into the cellular-steel deck panels at each edge of the roof.

A detail of a pin-connected box girder that ties into the base of a column over a concrete pier of the Squaw Valley ice arena. Thin steel mullions will contain glass curtain walls.

Dragline gets inspection from Keith Hutchison, Greer vice president and technical director, Phil Owen and Chuck Daub (l. to r.). Owen and Daub are Standard Oil lubrication specialists who render the school technical assistance on lubrication problems. Both have engineering degrees and both have completed Standard's Sales Engineering School. Daub has ten, Owen five years of field experience serving commercial customers.

Standard Oil helps this school teach men how to keep a construction job going

Hutchison, Owen and instructor John Rolando watch student load 17-yard off-highway dirt hauler, one of school's 26 units.

strands are attached 122 feet out.

The roof girders also extend back from the piers to anchorages 79 feet outside the building walls, and three cables connect the tops of the columns with the anchorages. These pile-supported anchorages are designed to resist uplift.

Spanning between the roof girders are 16-inch 35-pound WF purlins at 11-foot centers, with a cellular sheet-metal decking completing the closure. The open cells in the roof decking serve as heat ducts for the snow-melting system.

A reinforced-concrete grandstand extends across one end of the building, and bleachers provide seating around the other three sides. The entire end of the building near the outdoor speed-skating oval and the ski jumps can be opened and the bleachers rolled back to give the spectators a full view of the outdoor events.

Founded on piling

Step-tapered steel pile shells were driven 40 feet into the silty soil of the valley floor and filled with concrete. Clusters of eight piles support each of the 16 main piers that rise 33½ feet above grade to the base of the steel columns. Each of the anchor piers has five piles designed to resist the uplift caused by the load applied by the cables.

Diversified Builders constructed the concrete piers and the reinforced-concrete walls between the piers during the 1958 season. Before snow and cold weather put a stop to work, the firm also completed the substructures of the grandstand section across the closed end of the arena. After some threatening early winter cold spells, the weather turned very favorable, and some phases of the work continued until February, 1959.

Erect structural steel

Pittsburgh-Des Moines Steel Co., Santa Clara, Calif., subcontractor for the structural steelwork, fabricated the roof members at its Santa Clara shops. The 60-foot tapered columns, with a cross section like two crossed I-beams, were fabricated entirely from plates. They taper in four directions from 42 inches deep at the base to 24 inches at the top.

The box girders of the roof are 24 inches wide and taper from 42 inches deep at the piers to 24 inches at the peak of the roof and 32 inches at the anchorages. These girders were fabricated in sections that were welded together after they were assembled on the structure.

Roebling furnished the 2¼-inch prestretched bridge strands to exact length without any provision for adjustment. This meant that the steel had to be fabricated and erected with accuracy.

The six cables for each bent were attached to the top of the column, and the column was then set in place on the pier. Setting the 12½-ton 60-foot columns on 33-foot piers made a high lift for the P&H 50-ton truck crane that did the erection. This and other cranes on the job were supplied by Kelly Bros., Santa Clara.

The crew next set the 79-foot backleg section of the girder and bolted it to the base of the column. Holes in the tie-down plates at the anchorage were reamed in the field for exact fit after the backlegs were set.

Since there was no adjustment provided in the anchor cables, it was necessary to pull the columns back about 3 inches out of alignment to make the connection between these cables and the tie-down plates. A shop-built turnbuckle type of puller aided the crew in applying the tension to the tops of the columns while the cables were being connected.

The 157-foot main girders were then erected in two sections. The first 67-foot section was attached to its suspending cable on the ground at the base of the column. The section was then raised until the pin connection at the base of the column could be made. With this pin in place, the girder was lowered until it hung from the cable. The purlins were then placed on the girders.

The erection was carried to this point for one complete side of the structure before the second section of the roof girders was placed.

The 90-foot-long second section of each of the girders was then set up on falsework for attachment of the two suspending cables. With the cables attached, it was raised into place and pinned and bolted to the end of the first section. This joint was later welded and the pins and bolts removed.

When the two sides had been erected to this point, there was a space of approximately 15 inches between the ends of the girders at the peak of the roof. This portion of the work was completed in the fall of 1958, and the roof stood in this condition until the cellular-steel roof decking was applied last summer.

After the decking was in place, the steel subcontractor came back and installed the closing plates at the peak

reer Excavating and Mechanics School has learned one of the
ssons it teaches—how to keep equipment in service

uation: Time is money at Greer Excavating
d Mechanics School, Braidwood, Illinois. The
hool promises its students hours of experience
erating equipment. It teaches them how to
intain and service the machinery they work
ith. It also teaches the men how important it is
do the job right and on time.

to 70 students, guided by nine experienced
structors, work 26 pieces of equipment almost
ery daylight hour, seven days a week, winter
d summer. Bulldozers, scrapers, trucks, shovels
d draglines *must stay in service* in spite of the
gged treatment they get.

hat was done: From the first day of school
re than three years ago, Greer Institute's
uipment has been serviced exclusively with Standard Oil gasoline, diesel fuel, motor oil and greases. No unit has ever been down due to lubrication failure or because of slow delivery. How come? Because Phil Owen, an experienced Standard Oil lubrication specialist from Joliet, just 20 miles from the school, makes regular calls to check out any lubrication problem. From Wilmington, only 5 miles away, Standard Oil agent R. J. Kavanagh makes deliveries of gasoline, diesel fuel, lube oil and grease as often as every other day. The school never needs to telephone for service.

What you can do: To get this kind of service call the Standard Oil office near you in any of the 15 Midwest or Rocky Mountain states. Or write, **Standard Oil Company (Indiana), 910 South Michigan Avenue, Chicago 80, Illinois.**

You expect more from STANDARD *and you get it!*

Plenty of dirt to work with. School site is on 1,700 acre tract that has been ripped, torn and piled as result of strip mining. Greer instructor, John Rolando teaches student how to use skid shovel.

←For more facts, circle No. 282

◄ One of the project's big jobs was installation of cable lines. A Bucyrus-Erie backhoe digs a cable trench, a specially equipped tractor carries the huge reel and lays the cable, and an Allis-Chalmers grader backfills.

Included in water-storage facilities at the site is a 500,000-gallon tank. Prestressing wire is being wound around the tank shell by Herrick Iron Works, Oakland. ►

(Continued from preceding page)

of the roof. These plates maintain the alignment between girders on opposite sides.

Decking provides heat ducts

The cellular-steel roof decking was furnished and installed by Harold E. Peterson Co., Los Angeles. The cells in this decking are used as ducts for the circulation of warm air that melts the snow from the roof. Some of this air will be recovered from the compressors that maintain the artificial ice rinks, but additional heat will also be required.

The water from the melted snow will run down the channels of the roof to troughs at the wall line. Additional heat is provided at these troughs to keep the water from freezing as it is led away for disposal.

During the past construction season, the general contractor completed the concrete grandstand, bleachers, skating rink, and other features of the building. The grandstand structure was formed with lumber and plywood forms shored on American Universal tubular-steel scaffolding. Richmond Tyframes were utilized on the seat forms, and Burke form ties and other hardware on most other units. The concrete columns were formed with ⅝-inch plywood panels backed with 2×4's and tied with Bull column clamps. These re-usable strap-type clamps enabled the workmen to erect the forms in place very rapidly. McGough corner-lock castings were also used on some of the column forms.

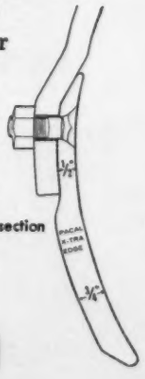
Concrete was placed in the high

Some 9,113 feet of 1⅛-inch Bethlehem wire rope is being installed for the chair lifts running to the crest of the ski runs at Squaw Valley.

PACAL

x-tra-edge blades

See the extra steel in the Pacal X-TRA-EDGE hardened center section. This new design provides extra working steel right under the greatest weight of the machine. It resists crowning and blade metal waste is kept to a minimum. Users tell us of as much as six times longer wear, up to 40% lower blade costs . . . used in winter and summer; on maintaining gravel roads or pavement, on shoulder maintaining, on snow and ice removal, on oiling and road mixing or blacktopping. It pays to use PACAL X-TRA-EDGE BLADES. Accurately punched for all makes. Write or call for details.



Also available ⅞" heavy duty section with ⅝" top.

All steels furnished by Pacal made in U.S.A.

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sections of the grandstand by a Kelly Bros. 35-ton P&H truck crane using two Gar-Bro ¾-yard buckets. Getting the concrete up to the high parts of the grandstand under the arena roof required some very delicate crane operation.

Many other structures

The buildings in the Olympic Village area, as well as spectator centers, administration buildings, and most others are of frame construction. Some of these have large glued-laminated wood members with the long spans exposed inside the structures, for striking effects.

An interesting construction operation was the building of the 400-meter oval-shaped skating track. This Olympic standard track is thought to be the largest artificial speed-skating rink ever constructed. It is based on a rock fill followed by a lift of sand. Then comes some 70 miles of welded-steel piping for the refrigerant. The pipes are laid in special supports on the sand, and additional sand fill is carried up to cover them. Successive applications of water built the ice up to a thickness of approximately two inches over the pipes.

The skating rink inside the arena has its refrigerant pipes cast into the concrete floor.

Although there was some protest when the Squaw Valley site was first selected, representatives from many nations have expressed complete satisfaction with the facilities. After accommodating the participants and spectators at the VIII Olympic Winter Games this month, the area will become a public recreation facility—certainly one of the finest of its kind in the world.

Personnel

The supervisory staff for Diversified Builders, Inc., includes project manager F. J. Cribbins (a vice president of the corporation), arena superintendent A. T. "Al" Hartley, and superintendents Tom Smart and A. H. "Bud" Weber. On the steel erection, Dewey Sharp was erection superintendent for Pittsburgh-Des Moines Steel Co., with Jim Smith serving as erection foreman. THE END

County Highway Official, Missouri—"Pacal ½" to ¾" x 8" special hardened blades giving about 5 times more wear than ½" x 6" blades."

County Highway Official, Minnesota—"380 hours on machine before blades were worn out."

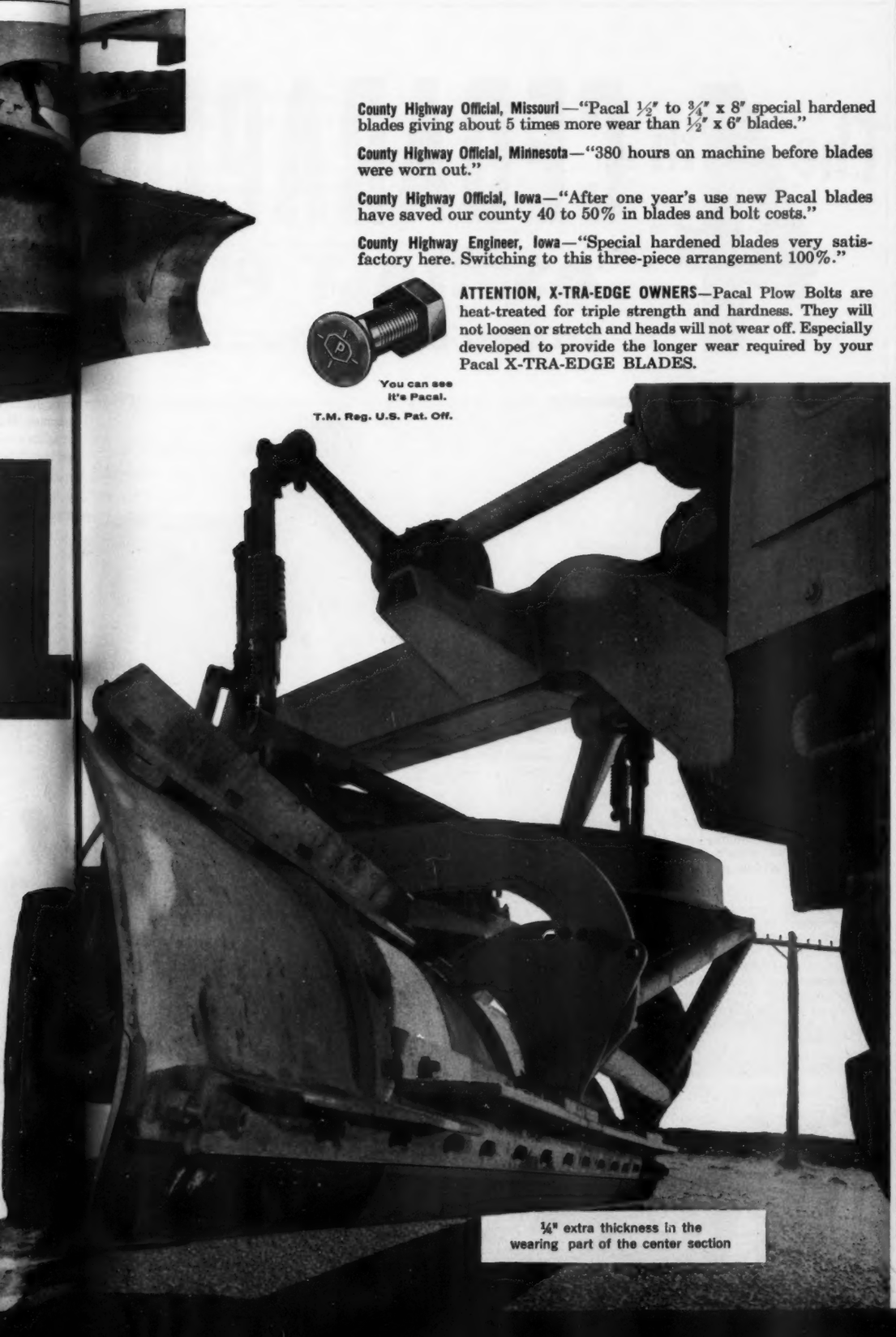
County Highway Official, Iowa—"After one year's use new Pacal blades have saved our county 40 to 50% in blades and bolt costs."

County Highway Engineer, Iowa—"Special hardened blades very satisfactory here. Switching to this three-piece arrangement 100%."

ATTENTION, X-TRA-EDGE OWNERS—Pacal Plow Bolts are heat-treated for triple strength and hardness. They will not loosen or stretch and heads will not wear off. Especially developed to provide the longer wear required by your Pacal X-TRA-EDGE BLADES.

You can see it's Pacal.

T.M. Reg. U.S. Pat. Off.



¼" extra thickness in the wearing part of the center section

Book on lighting for tunnels, shafts

■ "Underground Lighting in Mines, Shafts and Tunnels," by A. Roberts, is available for $12.75 from The Macmillan Co., 60 Fifth Ave., New York N. Y. The object of the book is to explain the terminology of the comparatively new technique, to discuss the basic problems of lighting engineering encountered in work underground, and to suggest the most up-to-date solutions.

Topics discussed include the design of underground lighting installations, tunnel and subway lighting, lighting the working face, electric lamps, and portable mine lamps. A bibliography and list of references conclude each chapter. Pictures, diagrams, graphs, and formulas supplement the written material.

NSGA-NRMCA fellowship for civil engineering

■ A research fellowship foundation for graduate study in civil engineering at the University of Maryland has been established by the National Sand and Gravel Association and the National Ready Mixed Concrete Association. The purpose of the foundation is to promote basic research in the properties of mineral aggregates and concrete and to study problems related to the sand and gravel and ready-mix concrete industries.

It will support graduate study and research leading to the master's and doctor's degrees. Fellows will be appointed for a one-year period, and any fellow may be reappointed for an additional year. Each fellow will receive a stipend of $2,000, plus tuition and other perquisites.

Applications for the fellowships may be obtained from Dr. Charles T. G. Looney, Department of Civil Engineering, University of Maryland, College Park, Md.

Trailmobile opens new sales, service facility

■ A sales and service facility has been opened by Trailmobile Inc., Cincinnati, at 4726 Clinton Highway, Knoxville, Tenn. It houses six service bays for all types of truck-trailers, and will carry a $60,000 parts inventory.

Branch manager is Sam Ross, and Charles Durnbaugh is service manager.

Chicago Pneumatic names

■ John Wylder has been appointed manager of the Boston district for the Chicago Pneumatic Tool Co., New York City. He will direct the company's accounts in all of the New England states, with the exception of Connecticut.

←For more facts, circle No. 283

Production of between 18,000 and 20,000 yards in a 10-hour day is average for the 17-scraper fleet working on a 9-mile stretch of interstate route south of Petersburg, Va. This Allis-Chalmers HD-20 and a D8 push-load a twin-engine Euclid scraper in a borrow pit.

Location of 15 borrow pits along 9-mile stretch and fast loading-dumping cycle of scraper fleet mean . . .

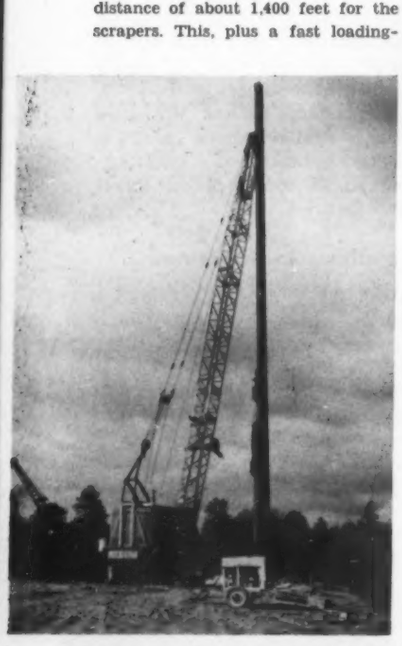
High production for grading spread

A total of 18,000 to 20,000 cubic yards of borrow and roadway excavation per 10-hour workday was average for Blythe Bros. Co., Inc., Charlotte, N. C., on a 9-mile stretch of Interstate 95 south of Petersburg, Va.

The project—actually two adjacent contracts—begins at and will tie into the southern terminus of the new Richmond-Petersburg Turnpike. One contract calls for grading, drainage, and construction of four bridges along a 3.67-mile section running south from the turnpike terminus. The other project, extending the interstate route farther south, consists of 5.39 miles of grading, paving, and five bridges.

Scrapers dig in

The contractor used a large scraper fleet to move about 925,000 yards of material on the 3.67-mile contract and 1,200,000 yards on the 5.39-mile contract. These quantities include 667,000 yards of borrow for the shorter stretch and 300,000 yards of borrow for the other. The material was obtained from about 15 borrow pits along the right-of-way. The pits were located to maintain an average haul distance of about 1,400 feet for the scrapers. This, plus a fast loading-

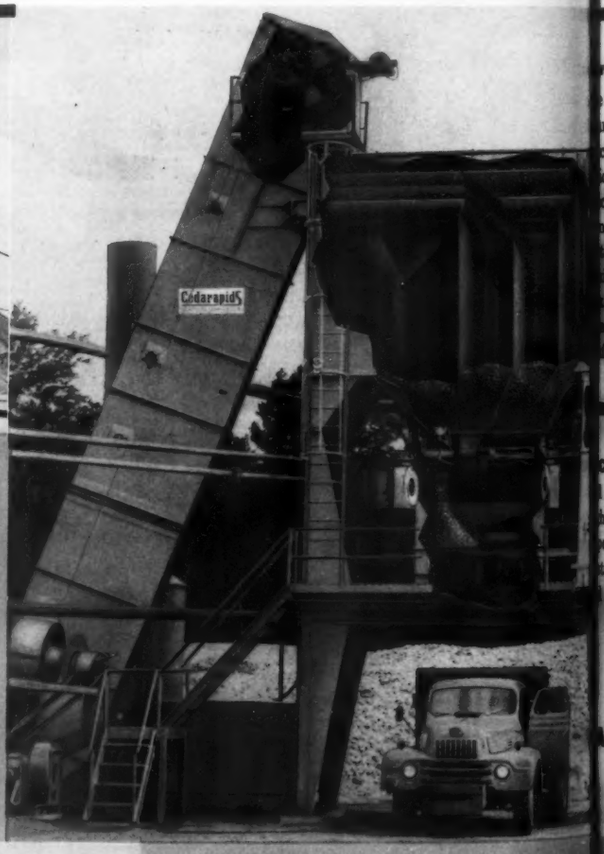


Union Monotube piles, used in place of alternate reinforced-concrete piles because of the cost factor, are being driven for one of the nine bridges. Driving is handled by a Delmag diesel hammer on leads that are supported by a Link-Belt crane.

The 4th CEDARAPIDS

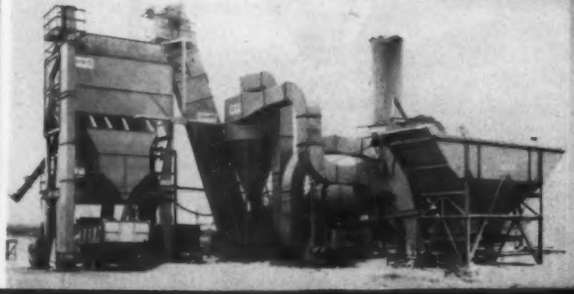
ASPHALT PLANT

for ADAMS CONSTRUCTION CO



100% portable Model G-Unit Plants have the only truly self-erecting mechanism available to raise "packaged" sections, complete with running gear, into position. Three G-Unit models meet your big-job needs, cut between-job delays.

Cedarapids Portable G-Unit Plants and all five models of H-Unit Stack-Up Plants are packed with profit-benefits that reduce your cost per ton. You'll see some in the cut-away drawing. Ask your Cedarapids Dealer to describe the many others, including the All-Automatic Controls that speed operation to give you two or three extra batches per hour, with no additional maintenance or operating cost.



Model H-Unit stack-up design, with self-contained "packaged" sections that are quickly and easily handled by crane, reduces your initial investment to save money right from the start. Sections can be equipped with running gear if moving becomes frequent. And there's a size to meet every capacity requirement, from 1500-lb. to 7500-lb. batches. Whatever type or size plant you need, you can depend on Cedarapids engineering in every model to cut your cost per ton.

One of the most useful machines in this sandy soil is a Michigan 180 rubber-tire tractor-dozer, here being used to push-load a LeTourneau-Westinghouse Model C scraper.

umping cycle, contributed to the igh production on the job.

Blythe Bros. used six twin-engine uclids, four LeTourneau-Westing-ouse Model C's, three Euclid S-18's, wo Euclid S-7's, and two Bucyrus 3-170 scrapers pulled by Caterpillar D8 tractors. This fleet was push-oaded at the borrow pits by three llis-Chalmers HD-20's, a Euclid TC-12, a Cat D8, and a LeTourneau-Westinghouse Tournadozer.

The contractor obtained excellent results by using a Michigan 180 compactor-dozer to supplement the push-tractors. This highly maneuverable and versatile machine, weighing about 36,000 pounds, was equipped with a dozer-blade attachment for conventional grading operations. Four steel compactor wheels, each consisting of four rows of steel pads, interchangeable with the rubber-tire wheels, make the 180 a highly maneuverable compacting machine.

The rubber tires are used when the rig is needed as a fast-moving dozer or push-tractor. Rubber tires seem to be more desirable in this part of the country, because of the high percentage of sandy soil found there. This soil has damaging abrasive effects on crawler tracks and causes maintenance costs to increase. Blythe Bros. has been studying the effects that different soils have on rubber and crawler-mounted equipment, and it feels that rubber-tire push-tractors fare better in areas having a high sandy-soil content.

Muck removed

The season before, over 170,000 cubic yards of muck had been removed so that the area could dry up by spring.

The muck found along the project was in naturally low spots and consisted of 4 to 5-foot-thick layers supported on good sand or sandy-clay strata. The contractor used a Northwest Model 6 crane, equipped with a 2-yard dragline bucket, to excavate the muck while backfill material was being hauled in by the scraper fleet. A Cat D9 tractor-dozer assisted in the operation. Muck was hauled away by two Euclid rear-dumps and an International 12-yard Payhauler.

During backfilling, no attempt was made to build up the finished grade of the roadway. Backfill was placed to a point above the existing groundwater level. This speeded operations and made it possible to remove the muck by the end of the season.

By scheduling the mucking operations this way, the contractor was in an excellent position to begin grading operations at any time during the winter and spring months.

Piles hit snag

During the driving of 65-foot-long Union Monotube piles for a structure, about four piles collapsed at a point 25 feet below the surface. This was caused by an incompressible stratum, sandwiched and restrained by surrounding strata. The 16-inch-diameter tapered piles collapsed because of the buildup of pressure within the incompressible stratum.

When these failures occurred, the contractor tested to find out whether or not the welded connections between pile sections caused the failure. A test pile was made up that had a solid, weld-free length at the failure point, and this pile also failed.

The contractor then straightened out the collapsed pile wall by driving into it a 24-foot length of piling hav-

←For more facts, use coupon or circle No. 284

w upkeep costs and ease of maintenance, plus the ability to handle rge tonnages, make Cedarapids my favorite," says Stuart Adams

leven years ago Mr. Stuart Adams started roducing asphaltic concrete and crushed stone ith Cedarapids equipment. Today this successful and experienced producer still orders and reorders Cedarapids Plants for his Adams Construction Co. and Levisa Stone Co. in Paintsville, Kentucky. His *fourth* Cedarapids Asphalt Plant is a stationary Model H60 which is producing p to 240 tons per hour.

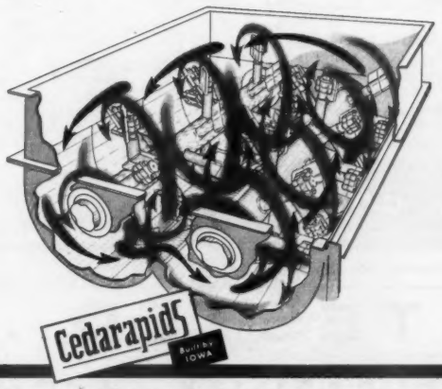
Mr. Adams' statement quoted above also applies to his Cedarapids Bituminous Paver, Stabilized Base Mixer, and his many Cedarapids-equipped aggregate plants in Kentucky.

When *your* market calls for big tonnages of asphaltic concrete produced at low cost per ton, be sure to investigate (and compare) all the profit-benefits Cedarapids engineers into every plant in the complete line. Ask your Cedarapids Dealer about the right size and type of plant for your needs.

Cedarapids engineered for lowest cost per ton

ng, wide mixer for extra capacity

Cedarapids pugmill mixer is the heart of r plant. Its wide, long body handles larger ches and its design makes a "shallow" batch ch requires less power. There is plenty of e above the shafts through which the bitu- and aggregate are carried, while the spiral rn of the paddles assures fast and efficient ng. Material is thoroughly stirred and inter- d into a completely coated homogeneous . There is no compaction of materials under s or paddles.



Cedarapids Bituminous Paver

increase your profit potential. Its -speed operation, steady-production endability, and low maintenance s have been proved on highway airport jobs all over the country.

IOWA
ANUFACTURING CO.
Cedar Rapids, Iowa

for these Bulletins

r you need portable plants for ng Interstate jobs, or station- for localized markets, these ins contain valuable infor- about all Cedarapids batch-type including production-balanced y equipment.

IOWA MANUFACTURING COMPANY, Cedar Rapids, Iowa

Gentlemen: Please send the literature checked.

☐ Bulletin AP-26 (Portable G-Unit Plants) ☐ Bituminous Pavers

☐ Bulletin AP-27 (Stack-Up H-Unit Plants) ☐ Aggregate Plants

Name_____

Company_____

Address_____

City_____ State_____

Another scraper in the spread—a Euclid S-18—is push-loaded with borrow material by a Euclid TC-12 in one of the 15 pits along the job. Earthmoving for this project totaled 2,125,000 yards, some 967,000 of it borrow.

A LeTourneau-Westinghouse sheepsfoot roller is pulled over freshly placed fill material by a Cat DW10 4-wheel tractor. Scrapers were routed in such a way that they also assisted in compaction.

This material hoist makes money for you!

TOW...

FLIP!...

Sasgen SELF-ERECTING LIFTAMATIC HOIST

...IT'S BRACED, READY FOR WORK!

GOES UP IN 2½ MINUTES—A ONE-MAN JOB!

This is the hoist that goes where you go, does what you want it to do—safely and dependably, built for heavy-duty service. Can be disassembled and shipped anywhere by common carrier.

Aluminum rails telescope, provide unloading heights from 13 to 40 feet. Has 7½ hp. gasoline engine and centrifugal-type governing downbrake (1000 lb. capacity) having 125 fpm. line speed. Remote control and adjustable limit stops standard. Side-loading platform is 34 x 60 inches to handle most loads. Also with reversible electric motor (500 lb. capacity). Write now for details—production is limited.

Sasgen DERRICK COMPANY

MANUFACTURERS OF EQUIPMENT FOR THE CONSTRUCTION INDUSTRY

3127 WEST GRAND AVE.
CHICAGO 22, ILLINOIS

For more facts, use Request Card at page 18 and circle No. 285

TIME TESTED...

QUALITY • DURABILITY • ECONOMY!

The hourglass has measured a quarter of a century while the field has been the test tube for Williams equipment.

Quality of materials and workmanship means durability under all conditions; the result can only be economy to the driller, economy to the general contractor, economy to the builder.

The manufacturers of Williams earth boring machinery have pioneered the development of auger-type drilling equipment for the installation of drilled piles and drilled and belled caissons. Whatever your large diameter drilling problem the engineers at the Hugh B. Williams Mfg. Co. will apply years of experience plus enthusiasm for progress in arriving at a satisfactory solution.

HUGH WILLIAMS

HUGH B. WILLIAMS MFG. CO.
8330 Lovett Ave. • Dallas, Texas
Manufacturer

JOSLYN MFG. & SUPPLY CO.
2101 Corinth St. • Dallas, Texas
Distributor

WRITE FOR ILLUSTRATED DESCRIPTIVE LITERATURE

For more facts, use Request Card at page 18 and circle No. 286

(Continued from preceding page)

ing a top diameter of 14 inches a
tapered like the ones already dri
A trimmed timber log provided
internal bracing for the 24-foot p
length and prevented any p
damage. The timber-braced pile w
capped with a steel plate so that dri
ing could be done with a steel H-pi
This allowed the contractor to re
the H-pile after driving the
piles. These piles, driven to the bo
of the 65-foot collapsed piles, were l
in place and later filled with concr

Once the collapsed piles w
straightened, the contractor used
jetting process while driving the
maining piles. This relieved the pr
sure against the pile walls. Drivi
was done with a Delmag diesel h
hammer.

Use of prestressed-concrete pi
16 inches square, was an alternate
the project. These were not used b
cause they were not competitive w
the Union Monotube piling.

Personnel

L. G. Richey was the project
ager for both contracts, and W.
Robinson was the grading super
tendent. F. E. Campodonico is
resident engineer and M. B. Vann
assistant resident for the Virgi
Department of Highways. THE E

U. S. Steel appoints

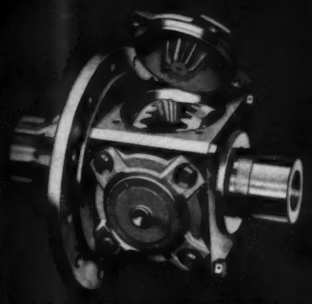
■ John H. Rooney has been a
pointed manager of sales-ordna
for the National Tube Division
U. S. Steel Corp., Pittsburgh.
succeeds David W. Fletcher.

Russel M. Braund has been na
administrative vice president of
counting for the production and
mercial activities of U. S. Steel.
succeeds the late L. C. Simm
James L. Ortner is the new vice pre
dent of accounting for central ope
tions.

Leukart division names

■ Donald Masson has been appoi
district representative for the J
Division of J. Leukart Machine Co.
Inc., Columbus, Ohio. He will cov
Ohio, Indiana, Illinois, Wisconsin
Michigan, Kentucky, and West Vir
ginia.

HYDRAIR*



POWER-TRANSFER DIFFERENTIAL

How these exclusive advantages

help you cut hauling costs...

EEP V-BODY

LW Haulpak®

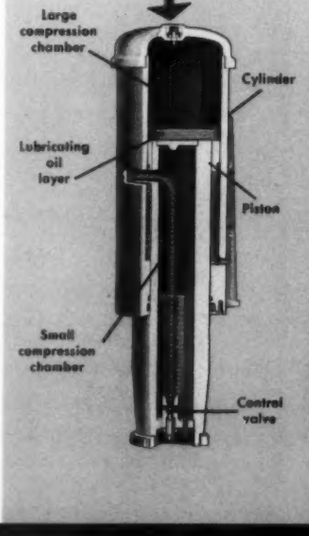
These 3 cost-cutting advantages

1 HYDRAIR smooths rough haul roads

On LW Haulpak, you get a sturdy, simple air-hydraulic suspension system that eliminates the costly, time-wasting maintenance and repair of springs. Four Hydrair units cushion against loading and travel shock . . . compensate *automatically* for off-center loading and keep the load riding level over humps and holes.

Other Hydrair benefits:

Located high out of dust, dirt, and moisture, Hydrair cylinders permit higher ground clearance (23″) and sharper turning (Haulpak makes 180° turn in area only 44′6″ wide). The elimination of springs and conventional front axle also reduces non-profitable dead weight.



How this exclusive suspension system works

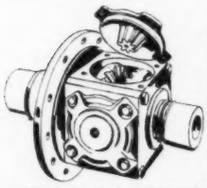
Basically, Hydrair operates like this: The upper compression chamber above the piston supports the load on a cushion of nitrogen gas and the lower compression chamber acts as a rebound chamber to snub the return or downward movement of the piston. The maximum stroke of the piston is 14 inches in the two front suspension units and as much as 7 to 9 inches in the two rear Hydrair units.

Conventional leaf springs have an "action space" of less than 4 inches, so it is easy to judge the tremendous improvement Hydrair represents as far as tire and vehicle life and operator comfort are concerned. Hydrair absorbs and cushions virtually all loading and travel shock, keeping this brutal punishment away from the tires, structure, and operator. Hydrair relieves the pounding on the road surface that creates "washboards".

yours only in Haulpak

2 POWER-TRANSFER DIFFERENTIAL pulls load through soft footing

This same exclusive LW differential has boosted production and cut costs for thousands of LW Tournapull® owners for more than 14 years . . . and now, *for the first time,* it is available on a truck. The power-transfer differential *automatically* puts power on the wheel with best traction, so you can haul through soft, slippery spots that bog down conventional haulers. The differential action also reduces wheelspin and tire wear.



The LW Haulpak differential works *automatically* at *all* times, is as simple in construction and as trouble-free as an ordinary differential. When one wheel tends to spin, idler pinions are automatically forced outward against friction surfaces. This slows the slipping wheel, and transfers up to 4 times its tractive effort to wheel on firmer footing. Neither wheel will spin independently until the 4-to-1 ratio is exceeded.

HAULPAK saves you money many other ways:

LESS MAINTENANCE (entire lube-check, needed only at 500-hr intervals, consists of just 3 easy-to-reach grease fittings). *POWER-MISER FAN* (cools with 20 to 25 less hp drain). *FOUR SEPARATE BRAKING SYSTEMS* (for fast stops with complete safety). *POSITIVE POWER STEER* (for faster turning, easier handling). *SIMPLE SIX-GEAR FINAL DRIVE* (compared to 12 or more usually standard). *BIG, ROOMY CAB.*

3 DEEP V-BODY gives you bonus tonnage within short wheelbase

Haulpak's exclusive deep V-body allows you to haul extra tons of material within a short wheelbase. Loaded material quickly fills all corners for big, low-void payloads. Deep "V" also provides a low center of gravity . . . gives Haulpak better stability on turns for high-speed hauling no matter how rugged the road.

In addition, the Haulpak V-body is exceptionally strong. It is constructed of high-tensile-strength steel . . . nearly 3 times stronger than steel commonly used in trucks, yet it weighs ⅓ less. Result: *You haul up to 30% more payload than Haulpak's weight.*

Bonus yardage in every Haulpak load rides in the exclusive V-shaped body. Low loading height (10'1") and large top opening (14'5" x 11") makes it easy for shovel operators to load Haulpak fast, without spillage. Heavy rubber pads provide 100% cushioning of the body against loading and travel shock.

HAULPAK LW 80...

offers new low in hauling costs,

80 tons, 100 yd capacity . . . speeds to 40 mph

Proved in strip mine operations, the 450-hp LW 80 hauls materials at lowest-cost-per-ton. Constructed of light, super-strong steels, Haulpak hauls more than 2 times its weight in payload! It is easier to handle and maneuver than 50-ton units of conventional design. Has many other profitable advantages. *Ask for complete information.*

This 80-ton HAULPAK performs at the Midland Electric Coal Company mine near Farmington, Illinois.

BIGGER PROFITS for you in well maintained haul roads

You can count on fast, low-cost haul-road maintenance when you use powerful heavy-duty LW graders. That's because LW graders work at higher speeds, complete jobs faster. Use them to build and maintain haul roads, level stockpiles and fills, improve drainage. LW graders last longer because of their 100% anti-friction drive and rugged one-piece main-frame. And you'll profit by the big 63-inch blade circle . . . the quick, easy moldboard tilt adjustment . . . rubber engine mounts . . . and full-sweep visibility. Seven models, 67 to 190 horsepower.

See color film "Revolution on Wheels"

In this 15-minute film you will see Haulpaks at work on highway construction, in copper and iron mines, and in rock quarries. You'll see why and how Haulpak moves more tonnage at big savings. Your LW Distributor will be happy to show you this film, "Revolution on Wheels".

Get complete facts on LeTourneau-Westinghouse equipment from your LW Distributor

Your nearby LW Distributor is ready, willing, and completely able to help you solve your hauling problems. He also handles LeTourneau-Westinghouse earthmoving equipment—Tournapulls, rubber-tired tractors, Rear-Dumps—and other lines of proven production tools. He is in a position to give you honest appraisal of trade-in equipment, and can assist you in obtaining helpful financing when it is needed.

See your Distributor, too, for dependable repair service and LW factory parts. You will be pleased with his prompt and efficient attention to your needs. Ask him to check your parts stock, and help arrange a schedule so his service department and yours can work together with greatest efficiency. You'll find your LW Distributor a good man to know. See him soon.

LW

Litho in U.S.A. LETOURNEAU-WESTINGHOUSE COMPANY, PEORIA, ILL. HP-2265-B-4

Names in the News

E. D. Hoekstra, executive secretary for the National Constructors Association.

NCA names secretary

E. D. Hoekstra has been appointed executive secretary of the National Constructors Association, succeeding Richard E. Chislett. The association is an organization of engineering and building firms specializing in the design and construction of chemical, petroleum, steel, and power facilities.

Connecticut highway department promotes

The Connecticut State Highway Department has promoted five to new posts. Walter T. Schuler is highway chief engineer; Robert G. Mitchell, highway assistant chief engineer; David S. Johnson, Jr., chief of planning, traffic, and design; Thomas H. Sellew, Jr., assistant chief of planning, traffic, and design; and Frederick J. Thompson, Jr., assistant chief of design.

AISC re-elects Dietrich

The American Institute of Steel Construction has re-elected H. Buckley Dietrich president. Also re-elected were first vice president James M. Straub, second vice president Harold G. Lewis, secretary M. Harvey Smedley, and treasurer Erwin P. Stupp. L. Abbett Post, executive vice president since 1947, was again re-elected. Six new directors were elected, and six directors were re-elected.

Asphalt Institute elects

Eugene M. Stone has been elected chairman of the board of The Asphalt Institute, succeeding Don L. Nielsen. New regional vice presidents are William N. Ruppel, A. R. Curtis, L. W. Walker, J. W. McCracken, E. E. Scholer, F. H. Brown, Marshall O. Hardy, A. T. Van Pelt, C. W. Turner, and Charles P. Taylor.

J. J. Tumpeer continues as treasurer.

Kentucky highway news

Ted R. Marcum has been appointed commissioner of rural highways in the Kentucky Department of Highways. He succeeds Mack Walters.

Brown & Root promotes

Howard Payne, assistant general manager of construction, has been promoted to vice president of Brown & Root, Inc., Houston, Texas, engineering and construction firm. He has had considerable experience with the company's foreign operations.

Jones Construction news

John Cockrell has been promoted to assistant vice president of the J. A. Jones Construction Co., Charlotte, N. C. He was formerly manager of the Ohio Highway Division Operation of the company.

Steinman partnership

R. M. Boynton, C. H. Gronquist, and J. London have been taken into partnership by D. B. Steinman, consulting engineer of New York City. The firm is now known as Steinman, Boynton, Gronquist & London.

William Oppel, Jr., manager of industrial relations for Mid-Valley, Inc.

Mid-Valley appoints

William Oppel, Jr., is the new manager of industrial relations for Mid-Valley, Inc., Houston, industrial building and engineering firm. He will have charge of labor relations and the public relations program.

Oppel succeeds E. D. Hoekstra, who resigned to accept a position with National Constructors Association.

H. K. Ferguson names

Raymond B. Aufmuth, chief engineer, has been appointed to the board of directors of The H. K. Ferguson Co., Cleveland. Aufmuth has helped design such multimillion-dollar projects as the huge underground parking garage below Detroit's Grand Circus Park, Standard Oil Co.'s laboratory in Cleveland, and the Gulf States Paper Corp.'s pulp mill in Alabama.

United Engineers news

Gustave A. Heckscher has been named new-business representative of United Engineers & Constructors, Inc., Philadelphia. At the same time, J. Edward Sunkes was appointed director of purchasing.

This 20 ton UNIT Model 1520T truck crane is setting steel for a power line atop Mt. Frances in Utah.

How many steel erection jobs like this have you lost because of the wrong type of equipment? To win more contracts of this nature you need a truck crane that can move in fast, yet have the reach and power to handle heavy beams at maximum heights.

UNIT TRUCK CRANES offer *true* mobility — road speeds up to 42 MPH — power and traction to meet the roughest off-the-road conditions. Power flows in a direct line to the tandem rear axles — maintains balance and uniform braking action on all rear wheels.

UNIT TRUCK CRANES put a wide range of power, plus precise control at your fingertips. No other cranes have a one-piece, cast gear case. This unique feature gives you perfect, compact machinery alignment for the most efficient performance. Double disc clutches provide the smoothest operation — are completely interchangeable. New oversize, ventilated brakes give you precise, accurate control for spotting loads. Independent boom hoist permits power raising and controlled lowering of boom at high speeds.

UNIT TRUCK CRANES are easy to operate and maintain. The roomy, Full Vision cab gives you an unrestricted, 360° view; has ample head room and large, super-safe, heat tempered glass windows. Sliding side panels and wide hood covers give spacious access to the crane motor and clutches.

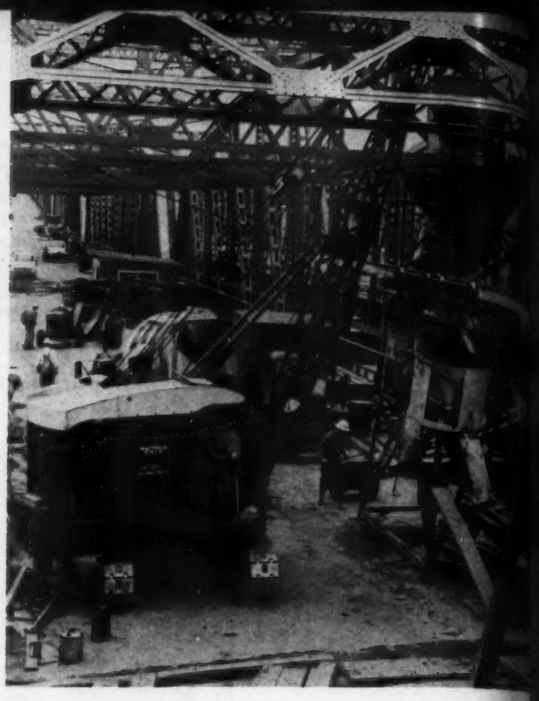
UNIT TRUCK CRANES are built in five size ranges — 10, 15, 20, 30, and 35-40 tons — to handle most any lift job. Convertibility to all excavator applications brings you a plus value. Your UNIT dealer has full information on every model — and the famous UNIT crawler-mounted machines, too. Call him soon.

SHOVELS ½ to ¾ YDS.
HOES ½ to ¾ YDS.
CRANES 5½ to 40 TONS
DRAGLINES ½ to ¾ YDS.

UNIT
CRANE & SHOVEL CORP.
6309 W. Burnham St.
Milwaukee, Wisconsin

For more facts, use Request Card at page 18 and circle No. 288

Old streetcar rails, removed from the Interstate Bridge between Portland, Ore., and Vancouver, Wash., during remodeling, went into the job-built monorail system used to deliver concrete to paving crews. The Gar-Bro ½-yard buckets have chute extensions that allow workmen to place concrete at any point on the deck. The Burke screed vibrators are powered by Kohler engines. Finishers work from bridges suspended from the monorail and resting at outside edge of the deck.



At the opposite end of the monorail, a Bucyrus-Erie 15-B crane uses a ½-yard bucket to charge the 6-yard double-gated hopper feeding the concrete-placing buckets. The Smith 7-yard mixer on the Reo truck does not have to wait for monorail buckets to take the concrete. A G. I. truck engine and drive mechanism power the monorail's endless cable.

Monorail system places concrete for bridge deck

by RALPH MONSON, field editor

Streetcar rails are salvaged for job-built system as remodeling job is done from the footings up

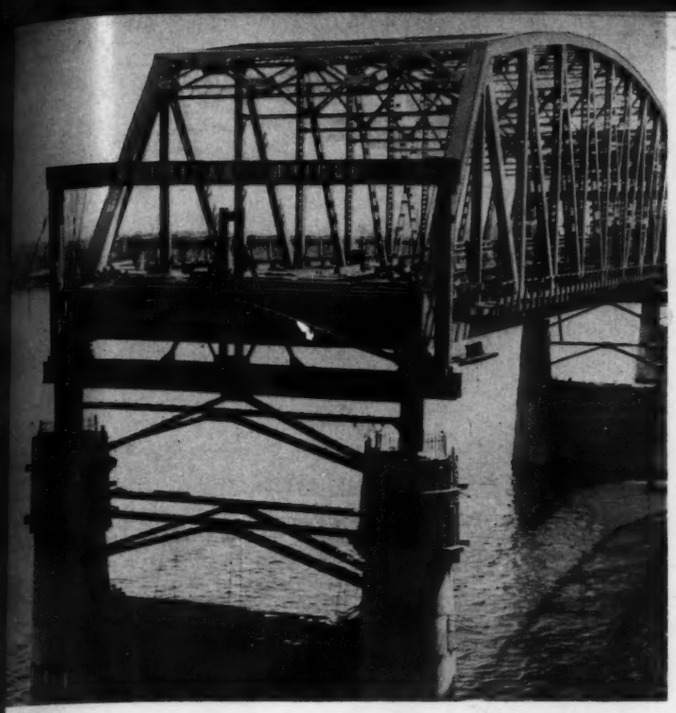
The bridge remodeling job, which started at the foundation, called for some special driving equipment to drive new piling, and this floating rig filled the bill. Its 70-foot leads project 40 feet below the water but are hinged at deck level so that they can pivot to clear either the bottom of the river or the bottom of the bridge steel. The hammer is a McKiernan-Terry 10-B-3. A guide made from 14-inch-diameter pipe keeps the current from sweeping a pile from the leads.

Typical of the cofferdams placed around piers to permit their enlargement is this one, with a top wale assembly of 12-inch WF65 steel wales with 12×12 timber struts.

Workmen start drilling 4-inch holes through a pier for 2¼-inch-diameter prestressing rods. Drilling is done with a Chicago Pneumatic CP-55 rotary using Christensen diamond bits.

Tensioning nuts at the ends of 2¼-inch steel rods bear against plates and the pipe sleeves that transmit force to the old pier concrete. Rods were stretched ⅜ inch.

Concrete is placed by tremie directly from the transit-mix trucks that drive out on the old bridge deck. A similar method was used to place the tremie seal.



American Bridge Co., subcontractor on the structural steelwork, had the job of raising the spans and holding them while piers were heightened. At each end of this span, it uses a jacking device with two 300-ton hydraulic jacks having a 5-inch stroke. Holes in the legs of the telescoping jacking bent, spaced at 4½-inch centers, take the locking pins after each jacking increment.

A unique monorail carrier system, built on the job from salvaged streetcar rails, proved to be both a convenience and a timesaver for the General Construction Co., Portland, Ore., on the remodeling of the old Interstate Bridge between Portland and Vancouver, Wash.

The monorail, hanging from the bridge trusses, enabled the crews to place alternate sections of the new concrete deck as required without waiting for the previously placed increments to attain strength enough to carry loads. Any method of transportation on the bridge deck would have meant many days of delay while concrete cured.

Casting the deck, however, was one of the last operations. General's $3 million contract with the Oregon State Highway Commission called for the complete remodeling of the old structure, which was built in 1917. A new parallel bridge immediately downstream was completed in 1958 and carried the traffic during the remodeling job. Each bridge now carries one-way traffic on the busy U. S. 99 freeway.

The new bridge was built with a hump in its grade line to provide increased clearance for river traffic and reduce the need for using the lift spans. The frequent opening of the lift spans has been a great inconvenience for highway traffic.

To bring the old bridge up to the same grade line, it was necessary to increase the height of several of the piers and to jack up the truss spans as much as 38 feet. In order to take this additional height, these piers had to be strengthened from the footings up. This entailed some unusual construction procedures and equipment.

General's 5½-yard dipper dredge Burrard was used for excavating. With the dipper stick removed, it was rigged as a dragline, and a barge-mounted Koehring 601 was used for the dragline haul back. All excavation was done as glory hole prior to installation of the cofferdams. With excavation a few feet below the bottom of the existing piers, and with river current and agitation during excavation adding their bit, silt was removed from beneath the pile-supported existing piers. It was then possible to encase the piers in concrete.

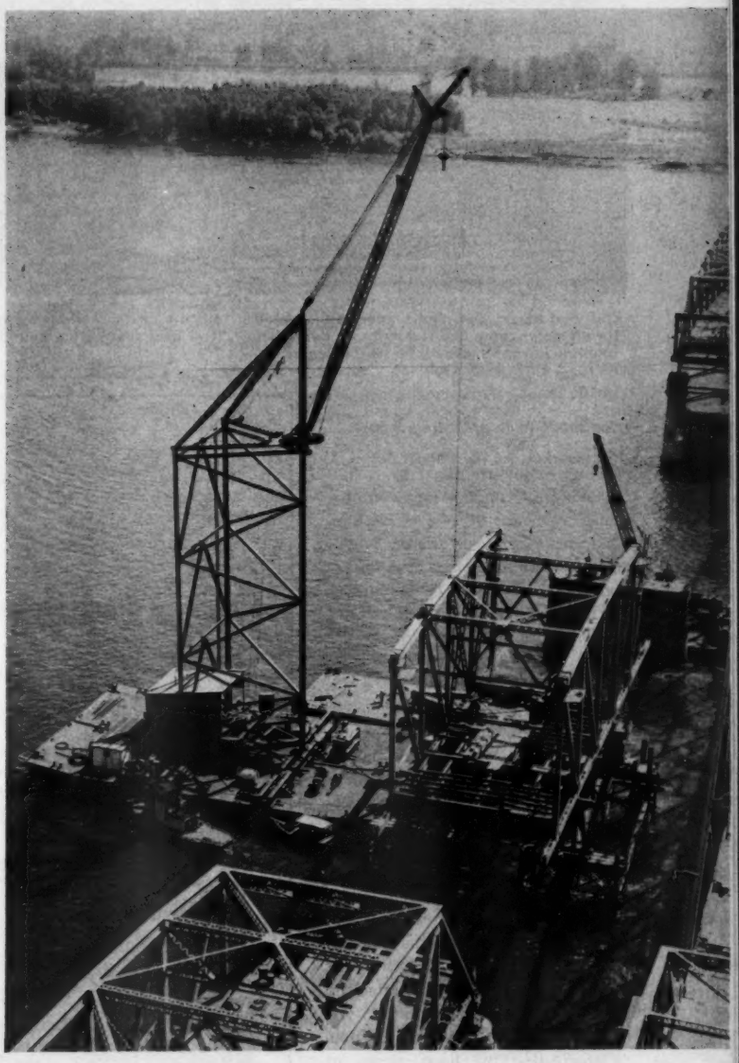
Because of the deep water, swift current, and low overhead steel trusses, a special rig was required to drive the piling. This floating rig had 70-foot leads projecting 40 feet below the water surface. The leads are hinged at the deck so that they can pivot to clear the river bottom or the bridge steel when the driver is being moved.

On the leads was a 14-inch pipe-sleeve guide, split and hinged so that it could be clamped around a pile. As one of the 60 to 65-foot piles was set into the leads, this clamp was attached around the pile and then lowered to the bottom of the leads. This prevented the current from sweeping the pile from the leads during positioning.

A McKiernan-Terry 10-B-3 steam hammer equipped for underwater driving drove the piles to bearing in the river bottom. A crane on the bridge deck helped with the handling of the piles. From 64 to 108 new piles were added to each of the five piers that were enlarged.

Heavy sheet-pile cofferdams were then driven around each pier to permit unwatering down to 43 feet below normal water level. Before the unwatering, an 8-foot-deep seal of tremie concrete was placed inside the cofferdam. The seal extended about 2 feet below the bottom of the old

(Continued on next page)



One of the old spans of the bridge is being dismantled by American Bridge's floating stiffleg derrick mounted on a 95-foot tower and using a 95-foot boom. The new span erected here will be similar to the one in the adjacent bridge. Crews are already loading the old Pier 5 for blasting.

Deck work is the last phase of the job. The old deck is being removed so that a vertical curve can be built into a new one to smooth out the abrupt grade breaks at the piers. An old piece of deck is being picked up by a Lorain crane and lowered between the floor beams to a waiting barge.

Old steel substringers that supported the streetcar rails are also picked off by the Lorain motor crane and lowered to a barge below. New deck forms were built up from the lower flanges of the steel stringers.

The forming crew works on deck forms; the man at right uses a SkilSaw to cut lumber to size. Building a vertical curve into the deck meant that some forms had to be built up as much as 27 inches above the stringer flanges.

(*Continued from preceding page*)

pier and completely under it.

The old pier footing consisted of a timber crib, 16×57 feet in section, filled with concrete. When the cofferdam was unwatered, the first operation was removal of the old timber crib that was made up of solid 12×12's horizontally and 2×12's vertically.

Prestress tie rods

Holes were then drilled completely through the old footing to permit heavy tie rods to join the new and old portions of the pier. A Chicago Pneumatic CP-55 rotary drill with Christensen diamond bits cut the 4-inch holes through the old concrete, which was found to be in very good condition. But the diamond bits gummed up and made little progress when the drills encountered one of the old piles.

General's shop came up with a very coarse carbide bit that penetrated the piles readily. By changing bits to suit the material, the crews lost no time in completing the holes. Seven of these holes were drilled through three of the piers and 12 through the other two.

The long 2¼-inch tie rods were threaded through the holes and left projecting about six feet from each side of the old pier. Pipe-sleeve pedestals were placed over these projecting ends, with large washers and tensioning nuts at the ends of the rods. These nuts were tightened until the rods had been elongated about ⅜ inch. This applied a stress of about 40,000 psi to the rods. This prestress helps overcome the eccentricity of the new piles and the resulting tendency of the new concrete to pull away from the old.

Applying this tension to the bolts was no small task. As many as six workmen manhandled the big wrench used for the job. In some cases, they called on help from a crane above.

Forms were then placed, and the additional concrete of the piers was placed through tremies from transit mixers on the deck. The tapered, round pier shafts were enlarged by adding an extra foot of concrete all around. Their height was increased after the trusses were jacked up to their new positions.

The structural steelwork, done

interchange this

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SPRINGFIELD, OHIO
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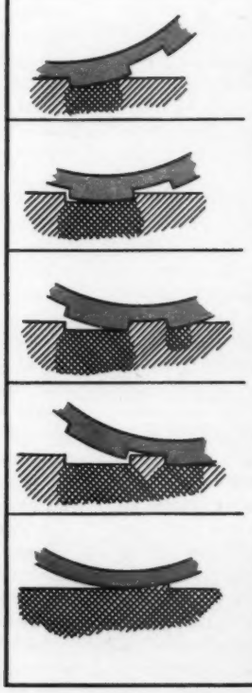

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Broad-faced special ... signed pads make ... exit . . . eliminate ... ing up of surface ... rial, as occurs with ... of sheepsfoot rollers.

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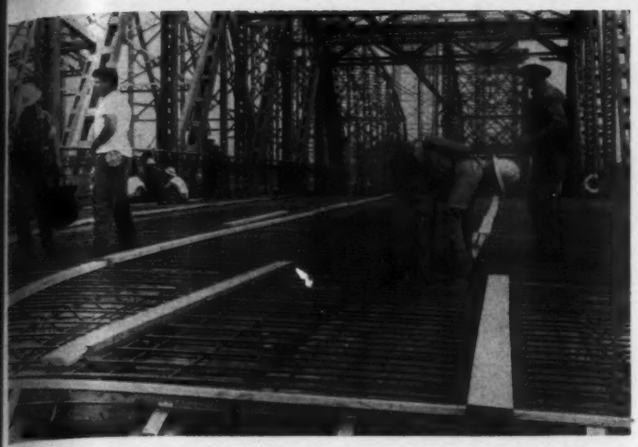


Workmen place the screeds that establish the grade for finishing the deck slab. The remodeled bridge will carry northbound traffic across the river; the one beside it will take southbound vehicles.

under a subcontract by the American Bridge Co., included a number of unusual operations. One of the lift-span towers had to be disconnected from the adjacent truss and replumbed after the far end of the truss had been jacked up to a new position. This meant lifting both the lift span and its counterweights to take the load off the tower.

During this stage, new sheaves and wire ropes were installed on the lift span.

Raising the heavy trusses from 6.5 to 38 feet above their old settings was a tricky jacking operation. American Bridge used a special jacking bent with telescoping legs resting on each pier and a pair of heavy overhead beams connecting the legs. Heavy cables suspended the truss from sheaves on the overhead beams. Inside each of the telescoping legs, a 300-ton hydraulic jack lifted the telescoping bent in 5-inch increments. Pairs of 3-inch locking pins supported the jack during the lifting stroke and then pinned the telescoping legs together while the jack was released and reset.

Pony steel bents were installed to support the spans in their raised position, and these were encased in the concrete as the piers were built up.

One of the original piers was eliminated in the remodeling as the two spans resting on it were replaced by a single new and longer span. The members of the old spans were carefully dismantled, match-marked, and stored for future re-use. To erect the steel of the one new span, American Bridge used a floating tower derrick with a 95-foot tower. This rig used a 95-foot boom to reach the highest steel.

Vertical curves are problems

With the trusses raised to their new positions, the grade line of the old bridge had assumed a hump roughly corresponding to that of the adjacent new structure. However, the abrupt grade breaks at the piers had to be smoothed over with vertical curves. This meant replacing the concrete decks with new floors built to these curves.

General Construction Co. cut the old deck into convenient sections, which were picked up by a Lorain motor crane and lowered to a barge. In this operation, the old streetcar rails were removed from the deck and salvaged, as were the substringers below them.

Workmen then began building up the new deck forms from the lower flanges of the steel stringers. Because of the vertical curves, the forms had to be built up as much as 27 inches above the tops of the stringers. For convenience and stability, these highest lifts were built in two sections. The form was first built up to the tops of the stringers, and a second set of studs and joists supported the shiplap sheathing of the form that actually received the concrete.

Monorail solves problems

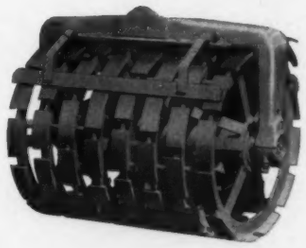
To maintain the construction schedule, the new floor had to be placed on the raised trusses while the steel was being erected for the new long span. This meant there could be access to the deck from only one end of the bridge.

Once the old deck slab was removed, there was no floor to carry cranes, trucks, or even buggies for transporting materials out onto the structure.

The sequence of deck pours required the placing of concrete in alternate sections, and this meant leapfrogging tactics for the concrete placement even though the forms were all built in advance.

These and other problems were solved or eased by the use of the overhead monorail system that was devised and built on the job by the contractor. The monorail consisted of about 1,000 feet of the old streetcar

(*Continued on page 70*)



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compaction densities

TWO AXLE TANDEM with segmented roll works on airport project in Ohio. With one machine and one operator, this contractor combines advantages of both crawler-drawn sheepsfoot roller, and conventional tandem roller . . . all in a single pass.

SEGMENTED ROLL is faced with staggered rows of heavy steel pads . . . applies pressure in footprint pattern. Roll is split in two free-rolling sections to minimize surface scuffing when making turns. To fit your needs for permanent or interchangeable use, they are available with or without separate axle and/or yoke.

THREE-WAY COMPACTION ON EVERY PASS is achieved here, compacting sub-base for airport runway in Columbus, Mississippi. Three-axle Buffalo-Springfield roller above uses segmented lead guide roll, vibratory center guide roll, followed by smooth-face drive roll.

3-wheel rollers | Pneumatic rollers | K-45 Kompactor | 3-axle tandems | 3-axle vibratory

BUFFALO-SPRINGFIELD COMPACTION EQUIPMENT • FLAHERTY SPREADERS AND SWEEPERS • STARDRILL-KEYSTONE DRILLING MACHINES

No doubt about it—big trucks make the money where there's sand and gravel to be moved. Zook Brothers Construction Company of Bigfork, Montana, will move more than 90,000 tons during their resurfacing job on the Meriwether Trail. Here one of their Mack B-813SX dumpers takes on a 15-yard load at the gravel plant.

You can put
when

Macks have everything needed for dependable, profitable operation in on- or off-highway construction. Maneuverability and ease of handling for fast spotting and dumping. Ability to haul maximum payloads with low operating costs. Mack Balanced Bogie with Power Divider and self-steering design gives outstanding tractive ability and maximum tire life. Only routine maintenance requirements. These are sensible reasons why you can't

Specs for Montana's Highway 28 called for a 5-inch layer of sand as a choker course. Hilde Construction Company of Great Falls found their Mack B-73S dumpers with Balanced Bogie ideal for pulling through the soft surface of the sand pits. Here the Macks move up to the loader.

down roads more profitably you're backed by MACKS

afford to operate anything but Mack trucks.

Your nearest Mack branch or distributor will be glad to give you on-the-job performance figures and the names of Mack users near you. Mack Trucks, Inc., Plainfield, New Jersey. Mack Trucks of Canada, Ltd., Toronto, Ontario.

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For more facts, use Request Card at page 18 and circle No. 290

A Hyster rubber-tire crane found plenty of work in carrying materials out to crews on the bridge. These are prefabricated form panels for the deck.

ceed on any desired schedule without any wait for the intervening sections to attain strength enough to carry loads. Secondly, there were no runways or other obstructions on the forms in the area where the concrete was being placed. This made the placement faster and easier.

Even the finishers used the monorail. They arranged hanging bridges that rested on the deck at the outside edges of the roadway and were suspended on hangers from the rail in the middle.

Personnel

Ted Harris was project superintendent on the work for General Construction Co., while Allen Johan served as project engineer and provided liaison with the home Others on the supervisory staff office manager Dick Savage, field gineer Jack King, and carpente perintendent Ed Harmic. Job intendent for the American Co. was Joe Davis.

Although the bridge will be ated as a toll facility by the Washington Toll Bridge Auth the Oregon State Highway Co sion supervised construction. The dent engineer was Al A. Rear, and assistant was Kenneth H. Whe Oregon's bridge engineer is Ivan Merchant. THE END

(*Continued from page 67*)

rail, hung from the truss steel over the middle of the roadway. Cables through holes in the rails suspended the system from the truss steel. At piers, where the span between trusses would have been too great, A-frames were made up of the salvaged substringers.

General's shops built a pair of carriers that rode on eight flanged wheels on the lower flange of the rail. An endless cable attached to the carrier was run through a sheave at the far end of the rail. At the loading end, this cable ran over a drive pulley attached to the rear wheel of a G. I. surplus Chevrolet truck. The truck wheel was jacked off the ground, and the truck engine and drive mechanism operated the carrier.

Before concrete placement began, lumber, reinforcing steel, and other materials were transported out to crews building the forms and preparing for the concrete placement. But the real value of the monorail system was realized when placement began.

Monorail transports concrete

At the loading end of the monorail, the contractor installed a 6-yard double-gated concrete hopper on a tall tower so that it could discharge directly into buckets hanging from the monorail carrier. A Bucyrus-Erie 15-B crane with a ¾-yard bucket transferred the concrete from transit mixers to the high hopper.

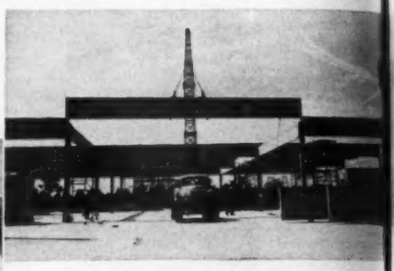
Two Gar-Bro ½-yard concrete buckets were loaded simultaneously from the hopper. This arrangement made it possible for the 7-yard transit mixers to be completely unloaded without having to wait. Two transit mixers were thus able to maintain a continuous flow of concrete to the placement crew.

The two buckets on the monorail were equipped with special swivel chutes so that the concrete could be placed at any point across the width of the roadway. The monorail held the bottom of the buckets 8 feet above the roadway.

In this operation, the value of the monorail system was especially noticeable. First, the concrete placement of alternate deck sections could pro-

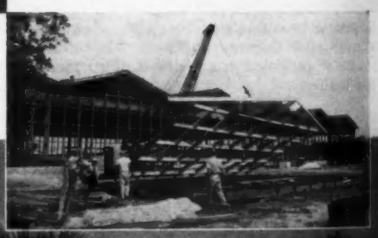
Fir plywood component versatile ne

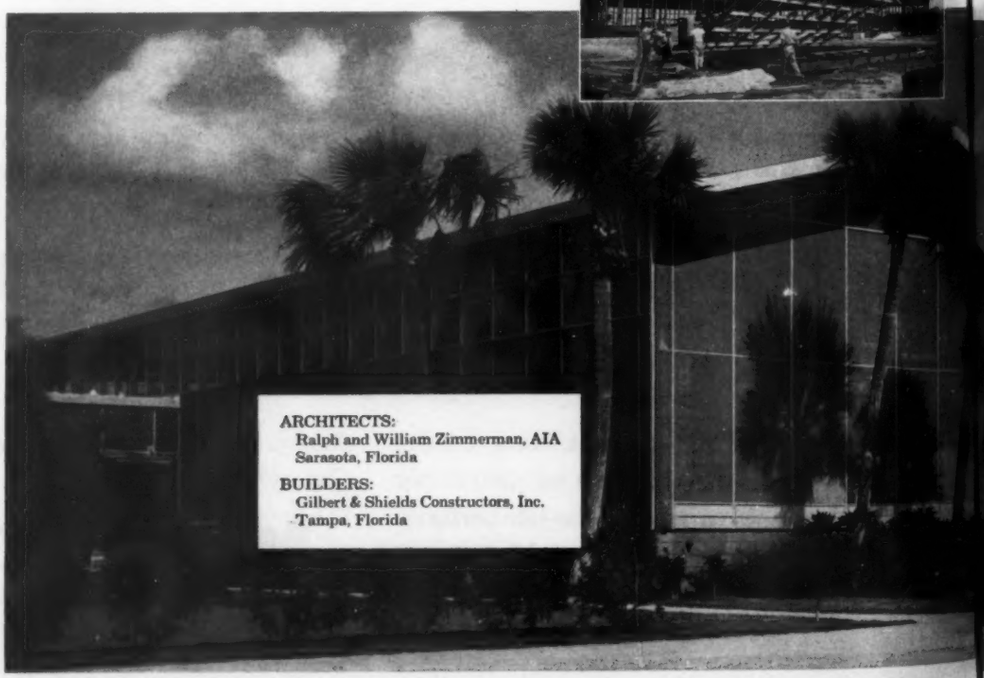
Giant prefabricated 4 x 48 foot fir plywood girders were crane-lifted into position atop supporting columns.



Stressed skin fir plywood roof panels were used in pairs to form peaked roofs over 40 foot bays.

Sidewall framing was tilted into position, covered with high density overlaid Exterior fir plywood siding.

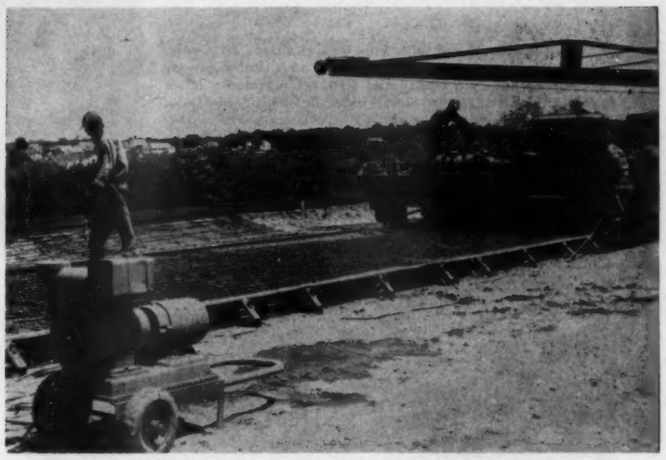




ARCHITECTS:
Ralph and William Zimmerman, AIA
Sarasota, Florida

BUILDERS:
Gilbert & Shields Constructors, Inc.
Tampa, Florida

BY MECHANIZING A PAVING SPREAD wherever possible, Franklin Contracting Co., Little Falls, N. J., averaged 2,200 to 2,500 square yards of concrete during an 8-hour day on the North-South Freeway, which is known as N. J. 42. At right, wire-mesh reinforcing is placed after the mix is struck off at a depth of 7 inches. The Viber electric vibrator, foreground, consolidates the mix adjacent to the forms. Curb work for ramps, left, is handled by a Rex 11S mixer, charged with aggregate by a wheelbarrow. Whiteman power buggies haul to the forms.



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ow-cost building techniques

...in 50,890 sq. ft. converting plant for International Paper Co.

One of the largest all-plywood and wood structures built since World War II, this Auburndale, Florida, plant of International Paper Company's Container Division demonstrates the outstanding technological advantage of modern plywood construction. Major key to building economies was the use of prefabricated fir plywood components.

Box beams, prefabricated of fir plywood, were one time- and money-saver. The beams, strong as steel and far lighter, have webs of 1-inch fir plywood and flanges and stiffeners of 2 x 12's. They were 4'x48', and had a clear span of 40' to support the series of eight 48-foot peaked roof bays.

Stressed skin roof panels, prefabbed with plywood, were lightweight and easy to install. Each pair of panels spans 40' to form the peaked roof over each bay. Top skin is ⅜" fir plywood, bottom ¼", glued and nailed to 2 x 8 framing.

Exterior walls are ¾" high-density overlaid fir plywood which requires no finish and is expected to be maintenance-free for the life of the building. The entire structure was completed in 154 working days. Structural members, including the fir plywood box beams, columns and girders, went up in 10 days. Stressed skin roof panels took 10 days; the siding went on in 5.

FOR INFORMATION on fir plywood component construction or other data, write
DOUGLAS FIR PLYWOOD ASSOCIATION
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—an industry-wide organization devoted to research, promotion and quality control

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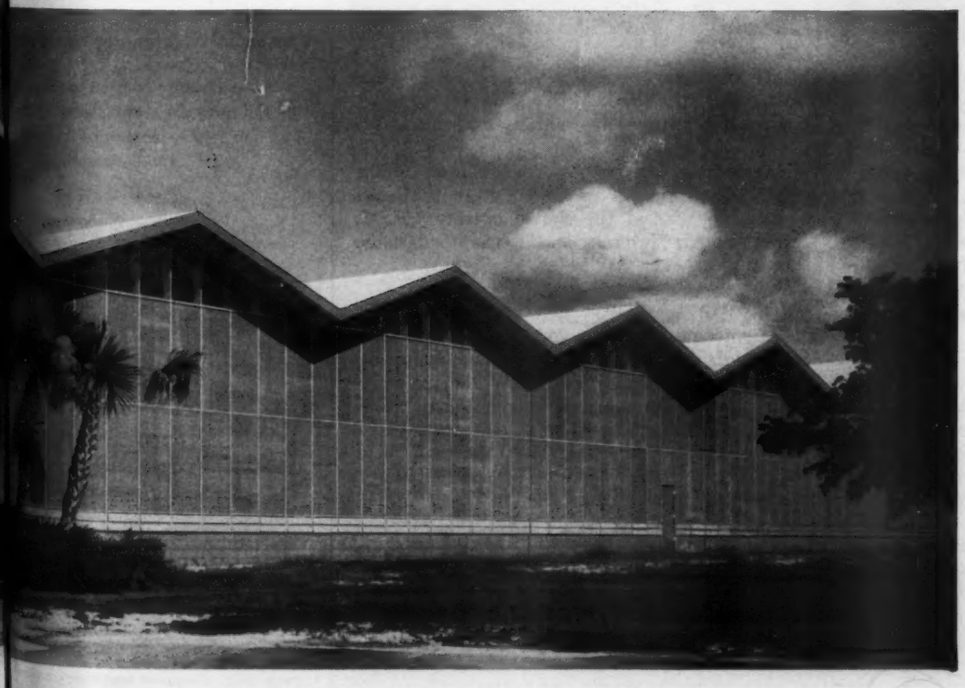


For more facts, use Request Card at page 18 and circle No. 291

Corps makes changes in contracting procedure

■ Two major changes have been made in the U. S. Army Corps of Engineers' contracting procedure. The Corps' contracts will now require prime contractors to provide additional superintendence for subcontracted work under certain conditions.

If less than 70 per cent and more than 50 per cent of the value of the contract work is subcontracted, one additional superintendent shall be provided at the site and on the contractor's payroll to be responsible for coordinating, directing, and expediting the subcontracted work. If 70 per cent or more of the value of the work is subcontracted, the contractor shall be required to furnish two additional superintendents to be responsible for coordinating, directing, and expediting the subcontract work.

If the contracting officer, at any time after 50 per cent of the subcontracted work has been completed, finds that satisfactory progress is being made, he may waive all or part of the above requirement for additional superintendence, subject to the right of the contracting officer to reinstate such requirement at any time during the progress of the work if he finds that satisfactory progress is not being made.

The second change calls for a monetary charge prior to the release of contract drawings. This applies to all persons and firms that request drawings in response to an invitation to bid.

The price for half-scale drawings will be based on a cost of 10 cents per sheet of drawings. A minimum charge of $5 per set also has been established. However, if the specifications require five or less sheets of drawings, the one-half size will be attached to the invitation and issued at no cost.

For full-scale drawings, the charge will be based on 50 cents per sheet. The full-size drawings will be furnished only to the individuals or firms that have purchased half-size drawings.

Accredited reporting agencies will receive a full set of construction plans on a loan basis at no charge and requiring no deposit.

A 79-foot-deep rock cut with 1 to 1 sides slopes on a relatively sharp curve is effectively handled on a Utah highway job near Vernal by a ripper and scraper spread. An offset tooth on an Ateco ripper pulled by an International TD-24 rips close to the side of the cut, while a Cat D8 with ripper works farther out. DW20 scrapers load the material. The tractor with offset tooth push-loads on its return trip.

Scrapers work close to toe of steep bank as . . .

Offset ripper shapes curve of cut

Excavating a deep rock cut on a curving highway alignment gave the contractor's ripping and scraper spreads an opportunity to demonstrate their skills. Using two tractor-rippers, one with an offset ripping tooth, the crew kept the 1 to 1 slopes trimmed to a bow-like contour as they excavated as much as 79 feet down into the rock.

The offset ripper tooth on an Ateco ripper, mounted on the rear of an International TD-24 tractor-dozer, enabled this machine to work close to the toe of the steep bank. This permitted the scrapers to load right up against the slopes and leave a complete finished slope as they went down. No cleanup or trimming of the banks was required.

The contractor on this 6-mile grading job on Utah 44 north of Vernal was a joint venture of Vernal Sand & Gravel, Vernal, and L. C. Stevenson, Roosevelt, Utah. The work was done under a $550,000 contract with the Utah State Road Commission under an agreement for reimbursement by the U. S. Bureau of Reclamation.

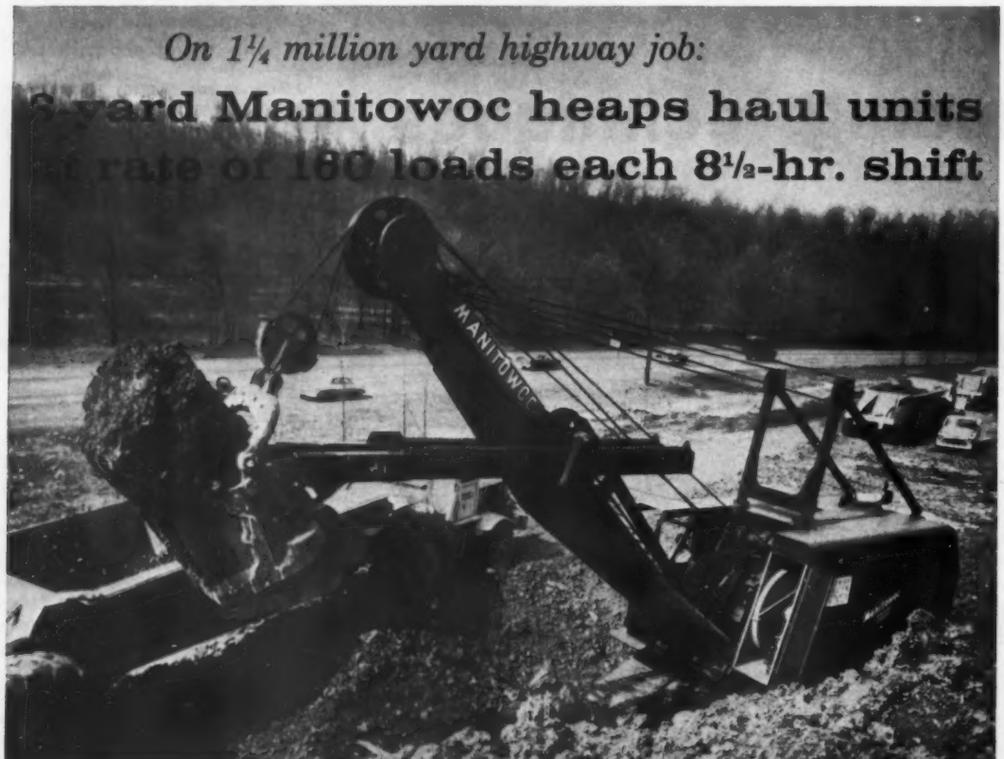
The new alignment carries the highway around the reservoir that will be created upon the completion of Stanaker Dam. The old road runs through the reservoir area and will be inundated when the reservoir is filled.

Finishing the slopes on the sharply curved cut area was only one of the

On the big embankment near the cut, a Payscraper unloads near an International TD-14 pulling a sheepsfoot roller. The lower face of the embankment was built up of large pieces of the best rock to protect it against wave action when Stanaker Dam reservoir is filled.

On 1¼ million yard highway job:

3-yard Manitowoc heaps haul units at rate of 160 loads each 8½-hr. shift



An important segment of the Interstate Highway program is now under construction 20 miles Southwest of St. Louis. Here Fred Weber Contractor, Inc. of St. Louis has the contract for approximately nine miles of new Interstate 44.

One section of the 1¼ million yard job is shown here — a 35,000 yard cut paralleling U. S. Route 66. Weber is using a 3-yd. Manitowoc Model 3600 shovel on this cut. An average of 160 heaped haul units are loaded each 8½ hour day. The hauling fleet, six 25-yd. and two 18-yd. units, has a long 12,000 ft. one-way haul, stopping traffic to high-ball across Route 66.

"Easy as pie" operation

On the same job Weber also has another 3-yd. Manitowoc shovel, a 25-ton Manitowoc Crane driving 50-ft. piles 45-ft. deep, and a 2½-yd. shovel working in a nearby quarry. When interviewed at the job site, Superintendent John R. Weber said, "We're getting very good production from the model 3600. It gives us more output with less maintenance." And the shovel operator, F. C. Warneke noted, "It's easy on the operator because air control makes it easy as pie."

Bonus Output Features

The Manitowoc 3600 gives you air controls, torque converter drive, disc-type clutches, and removable counterweight as *standard* features . . . provides equally great performance as a trench hoe, crane, dragline or clamshell. Analyze your upcoming bids now . . . see how the 3-yd. 3600 can help your profit picture. Your Manitowoc distributor will gladly fill you in on all the facts.

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MANITOWOC, WISCONSIN

CRANES	SHOVELS	DRAGLINES	TRENCH HOES
25 TON - 100 TON	1¼-YD. - 5½-YD.	1¼-YD. - 6-YD.	1¼-YD. - 5-YD.

For more facts, use Request Card at page 18 and circle No. 292

Equipment list

Some of the pieces of equipment used by the joint-venture contractor on this project include:

2 International 2T75 scrapers
2 Cat DW20 scrapers
3 International TD-24 tractors, one with Ateco ripper
2 Cat D8 tractors, one with Cat 8 ripper
1 Internationad TD-14 tractor with sheepsfoot roller
1 Cat D7 tractor pulling a sheepsfoot roller
2 Cat No. 12 motor graders
1 Cedarapids Commander crushing and screening plant
6 International 190 dump trucks
2 Diamond T water trucks

Water for compaction and dust control on the job is pumped to a rectangular 2,000-gallon water tank on a Diamond T truck by a Barnes pump powered by a Wisconsin engine. A flat plate is located below the discharge pipe of the truck so that, when the simple flap valve is opened, water hits the plate and is dispersed in a fan-shaped spray.

contractor's problems. Most of the 230,000 cubic yards of excavation was in shale interspersed with strata of other materials. The sharply tilted rock formations stabbed through the excavations at odd angles, producing unusual patterns in the sides of the cuts, as well as keeping the excavating crew guessing about what they would encounter next.

Rippers also push

Two tractor-mounted rippers kept the rock scarified for the scrapers and also helped with the loading. A third tractor push-loaded exclusively. The TD-24 carried one ripper tooth in the left outside position of its Ateco ripper bar. It ripped on every pass where this tooth was up against the bank. On the return trip, when the tooth was out away from the bank, this tractor push-loaded one of the scrapers.

The other ripper, a Cat D8 tractor with Cat 8 ripper, had a single tooth mounted in the center of the bar. This rig ripped in both directions, but also helped with the loading whenever there was a scraper waiting.

By careful ripping right to the limits of the curve and loading up against the toe of the slope, the contour of the bank was maintained with a minimum of dozing and without any appreciable cleanup.

Rock protects face of fill

Embankment material from this largest cut was carefully selected so

(Continued on next page)

Two International 2T75 Payscrapers load out the rough material. Most of the 230,000 yards of excavation in the cut is in shale interspersed with strata of rock at odd angles.

Herringbone's two pairs of Lang lay strands and one pair of regular lay strands provide the ideal combination of maximum flexibility with good stability.

Finer wires inside contribute to Herringbone's excellent drum-winding characteristic.

Heavier outside wires in each strand have greater resistance to abrasion.

"...we would never hesitate to recommend it"

GRAY & FEAR, CONTRACTORS

This company continues: **"We have been using your Roebling Herringbone* for about one year. We find it is one of the best ropes we have ever used, outlasting previous ropes three to one. It is good that such a reliable rope is available."**

This is a direct field quote on the most remarkable development in wire rope in years...a new concept in wire rope design. Roebling Herringbone is the regular lay and Lang lay wire rope—two-ropes-in-one rope—combining the best features of both.

Herringbone delivers extra flexibility, extra abrasion resistance, unusual structural stability, extra resistance to shock, easy operation over sheaves and drums and smooth spooling properties.

We recommend Herringbone without reservation for general hoisting and the entire range of heavy-duty equipment. Your Roebling Distributor or Roebling's Wire Rope Division, Trenton 2, New Jersey, will give the full and fabulous details. *Reg. App. For

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Base and surfacing aggregate is being produced by a Cedarapids Commander crushing and screening plant in a pit near the site. Belt conveyors feed the plant and deliver finished material to the elevated bin, where an International 190 truck is loading.

(Continued from preceding page)

that the lower face of the embankment received the biggest pieces of the best rock. This will serve to protect the embankment against wave action when the reservoir is filled. However, since there were many kinds of rock in very irregular layers, this selective placement was both slow and difficult.

As the scrapers placed the material on the fills, a sheepsfoot roller towed by an International TD-14 tractor walked down the material, breaking up some of the softer shales and supplementing the compaction effected by the rolling scrapers.

Water was added as needed for compaction and also for dust control. A Barnes 3-inch pump drafted water from a nearby canal to fill two 2,000-gallon water tanks mounted on Diamond T trucks.

The water trucks were fitted with simple shop-built valves and deflectors that applied the water in a fan-shaped spray. A 4-inch pipe coming out of the bottom of the back of the tank terminated in a 90-degree elbow pointing down. The end of this pipe was closed with a simple hinged flap valve fitted with a rubber gasket and actuated from the cab through a cable. The cable simply held the flap up against the end of the pipe in the closed position and dropped down to let the water flow through.

Falling from the pipe, the water struck a semicircular steel plate a few inches below. As the truck moved along, this spread the water in a fan-shaped spray over an area greater than the width of the truck.

The contractor produced aggregate for the base and bituminous surfacing from a pit located near the right-of-way. Two International TD-24 tractor-dozers pushed gravel to a trap feeding a belt conveyor that carried the raw material to a Cedarapids Commander portable crushing and screening plant. A second conveyor carried the finished material to a surge bin from which trucks hauled to the roadway or to stockpiles. Six International 190 dump trucks handled the haul.

This was a peculiar gravel deposit, containing a high percentage of very fine dust but practically nothing in the normal sand sizes. It required a lot of crushing to fill in the sand range and resulted in the waste of some 15 to 20 per cent of the material as excess fines.

The priming of the base and mixing of the road-mix surfacing were handled by a subcontractor.

On the job most of the time were the two partners in Vernal Sand & Gravel, Stan Robbins and Ercil Oaks. They served as joint project superintendents. Ross Slye served as resident engineer for the Utah State Road Commission. Alton H. Peterson is construction engineer for the Vernal unit of the Bureau of Reclamation. THE END

Offer revised edition of book on hydrology

■ A second revised edition of "Hydrology," by C. O. Wisler and E. F. Brater, has been published by John Wiley & Sons, Inc., 440 Fourth Ave., New York 16, N. Y.

Subjects detailed are the hydrograph, factors affecting runoff, precipitation, infiltration and soil moisture, ground water, water losses, runoff, floods, and stream-flow records. Two new chapters deal with the hydrology of semi-arid basins and the effects of snow upon the hydrology of an area. Maps, graphs, tables, and formulas abound.

The price of the book is $9.25.

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A truck quality-built for *toughest* construction jobs!

1960 Dodge Cab-Forwards offer new gasoline V-8 engines and four big Cummins diesels. Strong new heat-treated chrome-manganese frames, aluminized mufflers, big 14- and 15-inch clutches. And a whole line of new transmissions, with up to 20 speeds forward!

Big choice of models includes tandem and single-rear-axle types. Many wheelbases of ideal length for dump, rock and mixer bodies. Tractors, all the way up to 76,800 lbs. G.C.W.!

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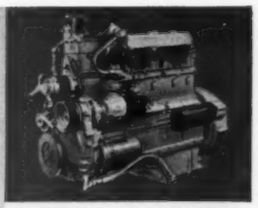

CUMMINS DIESELS are now available in Dodge for big fuel savings and extra stamina in construction hauling. Four engines available, with displacements from 464 to 743 cu. in.; horsepower to 220; torque to 605 lb.-ft.

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NEW GAS V-8's, with 361- and 413-cu. in. displacements, deliver up to 228 horsepower. They're packed with premium features, such as tri-metal bearings and oil cooler, to insure peak performance and long life.

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Labor Review

Arizona contractors asked to make way for Glen Canyon settlement

The Merritt-Chapman & Scott Corp. announced a tentative agreement with five Arizona building trades to end a five-month strike at Glen Canyon, but settlement depended on Arizona contractors' willingness to release the unions from a contract provision requiring equal terms for all contractors.

The settlement proposed by M-C & S and the unions would provide a 50-cent hourly wage premium for the contractor's Glen Canyon project at Page, Ariz., but would not call for the $6-a-day subsistence required at Page under the state-wide master labor agreement. The unions claim, however, that they cannot settle on these terms without assurance that they will not be sued for granting Merritt-Chapman more favorable terms than those granted other contractors at Page.

The Glen Canyon contractor has joined the unions in requesting that assurance from the Associated General Contractors and other employer parties to the master agreement. Merritt-Chapman argues that since it has spent millions of dollars in community facilities at Page, it should be released from the subsistence pay obligation incurred by other contractors in the area.

Indications were that the contractors would not favor this proposal. Nor had they accepted another union proposal—that the master agreement be revised to require a 50-cent hourly wage differential, rather than a $6-a-day subsistence payment, in northern Arizona. The contractors reportedly countered with a proposal to add Page to the list of free zones, thereby requiring neither subsistence nor premium pay. A higher hourly base rate is opposed, it is said, because of the effect it would have on overtime rates.

Laborers, ironworkers settle to end San Antonio tieup after three-month strike

The San Antonio, Texas, construction strike came to an end after nearly three months, as ironworkers and laborers agreed on two-year pacts with the Associated General Contractors.

The ironworkers followed the example of carpenters and operating engineers in settling for an immediate raise of 12½ cents, with another 12½ cents to follow next July. The ironworkers' pact expires two months after that of the other crafts—on August 31, 1961.

Last to settle, the laborers received the 15-cent package they asked for. Running for two years, to July, 1961, the agreement calls for a raise of 7½ cents immediately and again next July.

New hourly rates are as follows: operating engineers, $3.37½; ironworkers, $3.50; carpenters, $3.12½; laborers and hod carriers, $1.52½.

Unions win wage suit against highway contractor in southern Nevada

The Nevada Supreme Court ruled that when Thorn Construction Co., Inc., agreed to be bound by the terms and conditions of a master labor contract between contractors and building trades unions it also bound itself to pay a wage adjustment subsequently agreed upon as part of the continuing master agreement between the unions and the Southern Nevada Chapter of the Associated General Contractors.

Wage adjustments were settled upon in August, 1955, when the Thorn Co. had nearly finished a road construction project. The company refused to pay the increased wage rates, and the hod-carriers union and others sued. According to the State Supreme Court's decision, the company refused to pay the increases on the ground that it had received no notice of the wage negotiation since it had not made the contractors' association its agent to receive notices.

The contractor, stated the court, having agreed to be bound by the master agreement, could have required personal notice of change. In the absence of such requirement, and upon compliance by the union with the method of giving notice as prescribed by the contract, the "Thorn Company assumed the risk of receipt thereof."

Texas teamsters' local enjoined from picketing by new Taft Act Section

Teamsters Local 745 was the first union to feel the sting of Taft Act amendments in the new Reporting and Disclosure Act when a federal district court granted a temporary injunction against picketing of a Dallas, Texas, building-materials supplier.

The union was charged with violating Section 8(b) (7) (B) of the act by picketing Macatee, Inc., after employees had voted against representation in a National Labor Relations Board election. The new Section, which took effect November 13, bars recognition of organizational picketing within 12 months of an NLRB election.

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says Anthony Garcia, President
Allerton Construction Co., New York

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Avoid legal pitfalls

Federal income tax

THE PROBLEM: *A partnership agreement for construction projects provided that any project was to be performed on the "completed-contract" basis, with no profits to be distributed until completion. The partnership undertook an extensive project; then one partner sold his entire interest to the partnership. The project was only about three-fourths completed at that time, and the ultimate profit could not have been determined. Was the amount received by the partner for his interest taxable as a long-term gain from the sale of a capital asset and not as ordinary income?*

THE ANSWER: Yes. (Berry v. United States, 267 Fed. 2d 298, decided by the United States Court of Appeals, Sixth Circuit.) The court set aside a contrary decision by the United States District Court, Western District of Tennessee.

Blasting damage suit was defeated

THE PROBLEM: *Owners of a dwelling house sued for damage to it, claiming that concussions from blasting operations carried on in defendant's quarry was the cause. Faces of the quarry were from 3,300 to 4,000 feet from the house on the same ridge. The quarry had been operated for 60 years or more. Plaintiffs had owned their property only a few years. The house was poorly designed and defectively constructed. It was constructed according to a "mental picture" instead of plans and specifications. The footing averaged only a foot in depth and was not reinforced. Expert witnesses attributed the damage to the building to weather, poor construction, and soil-settling conditions. Test of explosions of comparable force showed that they were not sufficient to have caused the damage. Did a jury rightfully determine that defendant was not liable?*

THE ANSWER: Yes. (Summers v. Tavern Rock Sand Co., 315 S. W. 2d 201, decided by the Missouri Supreme Court.)

But the court said that in Missouri, as in some other states, one conducting blasting operations is liable for injury to adjacent property by concussion, regardless of negligence, the same as if rocks and debris had been cast upon the premises.

Texas labor law

THE PROBLEM: *Eight union laborers on a Texas construction job were less than one-third of the laborers working on the project. Under state law were they entitled to picket the job to compel the contractor to bargain with them collectively?*

THE ANSWER: No. (Flenoy v. Yarborough, 318 S.W. 2d 15, decided by the Texas Court of Civil Appeals, Austin.)

Concrete placing

THE PROBLEM: *Defendants were sued for a balance due for work involving placing concrete. Did they establish a valid counterclaim?*

THE ANSWER: Yes. (Manufacturers Casualty Insurance Co. v. Intrusion-Prepakt, Inc., 264 Fed. 2d 758, decided by the United States Court of Appeals, Fifth Circuit, upholding a decision by the United States District Court, Southern District of Florida.)

The Court of Appeals decided the evidence showed that defendants were entitled to collect on their counterclaim on the ground that plaintiff, by mistake and failure to conform to its design and representations, placed concrete slab about three feet thicker than planned. As a result, defendants' salvage return on sheet piling was diminished by $6,620, and plaintiff was therefore bound to make good the damage.

Engineers' fee computed

THE PROBLEM: *Highway engineers claimed that a balance was due them for services rendered to the New York State Thruway Authority, under an agreement that they were to be paid a fee of 3½ per cent of the "current prices" of the project as approved by the superintendent. On the facts of the case, did the state properly determine that "current prices" meant those which the Department of Public Works had compiled and published on a state-wide and district-wide basis from the bids of successful bidders for state construction contracts—as distinguished from the prices supplied by claimants in preparing cost estimates?*

THE ANSWER: Yes. (Edwards v. State of New York, 178 N. Y. Supp. 2d 287, decided by the New York Court of Claims.)

The contracts provided that the claimants were to do the engineering work of preliminary surveys, plans, estimates, specifications, and right-of-way maps. The work was divided into (1) surveys and maps, called "part 1 work"; (2) preliminary plans and estimates, called "part 2 work".

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Hard-working Ford CT-950 tractor leaves Cook gravel pit with 18 yards of aggregate. Aluminum walking beam and rubber suspension system of tandem axle assembly reduce chassis weight, permit higher legal payloads.

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(3) detailed contract plans, design drawings, and itemized estimates of the construction cost of each project, called "part 3 work," which were to be "computed at current prices as used by the Department of Public Works." The claims arose under part 3 of the work.

Cost-plus contracts

THE PROBLEM: *A municipal waterworks construction contract specified that the contractor should receive a fee equal to 15 per cent of the guaranteed estimate of construction cost and additional compensation for use of machinery furnished by him. Was the contract void, and therefore subject to attack by taxpayers, on the ground that the contract was against public policy, as giving the contractor a dual interest in the contract and making him his own employer?*

THE ANSWER: No. (Findley v. Vidalia, 51 S. E. 2d 512, decided by the Georgia Court of Appeals.)

The court reasoned: The agency in the contractor, with respect to the purchasing of materials and the employment of labor and supervisory personnel, was limited by the terms of the contract in such manner as to bind the contractor to the plans, specifications, estimates, and costs set forth therein. Even if some provisions of the contract standing alone may seem to subject it to the attack that the contractor was his own employer, the contract as a whole was not properly capable of such interpretation.

Sub won extra pay

THE PROBLEM: *The federal government was about to award an Air Force Base construction contract, and the contractor to whom the contract was later awarded induced claimants to bid on a subcontract involving excavation according to the government plans. Afterward, the contractor was awarded the contract and induced the claimants to make good their bid for a subcontract. If the contractor knew, before being awarded the contract, that the plans and specifications had been so materially changed as to greatly increase excavation required, but concealed that fact from the claimants, were the latter entitled to collect extra pay?*

Edited by A. L. H. STREET
Attorney-at-Law

These brief extracts of court decisions may aid you. Local ordinances or state laws may alter conditions in your community. If in doubt, consult your own attorney.

THE ANSWER: Yes. (Nolan Bros., Inc., v. United States, 266 Fed. 2d 143, decided by the United States Court of Appeals, Tenth Circuit, upholding a decision by the United States District Court for Oklahoma.)

Abortive contract

THE PROBLEM: *A city contracted to employ an engineer on a percentage-fee basis to make necessary preliminary investigations and plans for proposed sewer improvements, and to supervise the construction. But no available funds for construction were available and a proposed bond issue was voted down at an election. The city paid an agreed fee of $1,000 for the engineer's preliminary report and estimate. Was the contract void to the extent that it involved expenditure of funds not presently available?*

THE ANSWER: Yes. (Shikles v. City of Clinton, 319 S.W. 2d 9, decided by the Kansas City, Mo., Court of Appeals.)

The case involved application of a state constitutional limitation of the power of municipalities to incur obligations in excess of available revenue.

Trespassing children

THE PROBLEM: *In clearing land in a residential area, a contractor dug a 12-foot-wide, 6-foot-deep ditch in which to bury tree stumps. Overnight rainfall filled the ditch and, in the absence of the contractor's crew, a trespassing 6-year-old boy drowned while playing near a section of the ditch. He evidently slipped and fell into the ditch. Were the owner of the land and the contractor liable in damages?*

THE ANSWER: No. (Minneti v. Evans Construction Co., 160 Fed. Supp. 372, decided by the United States District Court, Eastern District of Pennsylvania.)

The court, in ordering dismissal of a damage suit, said that plaintiff failed to prove that the contractor knew or ought to have known that the ditch had become water-filled and presented a hazard for neighborhood children who customarily played on the land.

The court decided: Under Pennsylvania law, a possessor of land is subject to liability for bodily harm to young children trespassing thereon, caused by a structure or other artificial condition which he maintains upon the land. If the place where the condition is maintained is one upon which the possessor knows or should know that children are likely to trespass, and the condition is one which the possessor knows or should know will involve an unreasonable risk of death or serious bodily harm

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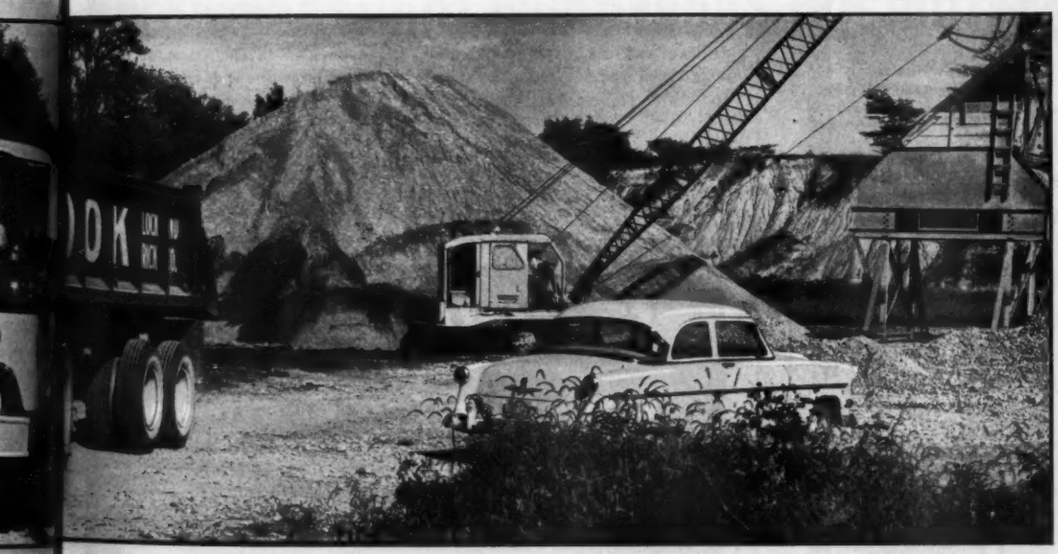

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avoid legal pitfalls

to such children, and children because of their youth did not discover condition or realize the risk involved in intermeddling in it or in coming within area made dangerous by it, the owner is liable. Utility to possessor of maintaining the condition is slight as compared to the risk to young children involved.

Owner's liability to contractor's men

THE PROBLEM: *A worker on a federal dam project was killed when he fell from a scaffold while helping remove concrete forms. Was the government liable under the Federal Tort Claims Act, on a theory that it negligently failed to promulgate regulations for the safety of the contractor's employees?*

THE ANSWER: No. (Kirk v. United States, 161 Fed. Supp. 722, decided by the United States District Court, District of Idaho.)

Evidence disclosed that the cause of the accident was the negligent manner in which the forms were being moved by employees of the contractor, and that failure on the part of deceased to secure himself with his safety belt and rope was the negligence which contributed to his death. Failure, if any, of the government employees to effectuate a program of accident prevention and particularly to effectuate provisions of a manual of safety regulations, which were made applicable to deceased's employer by government contract, did not create a duty or obligation of care to the deceased.

The fact that an employer of an independent contractor retains the right to inspect work under construction to see that provisions of the contract are carried out, and also retains the right to stop work if they are not, is not sufficient in itself to make such employer liable for harm resulting from negligence of an independent contractor in conducting details of work.

Damage by blasting on federal projects

THE PROBLEM: *Construction of a lock in the Mississippi River under contract with the federal government necessitated removal of earth and rock by blasting with dynamite. The method used in blasting was approved by the government and became a part of the plans and specifications. The blasting was done under inspection by governmental employees and did not deviate from the contract requirements. Nearby dwelling-house property was damaged by the blasting, solely by concussions of the atmosphere and vibrations of the earth and without any negligence on the part of the contractors. Were the land owners entitled to an award of damages against the contractors?*

THE ANSWER: No. (Pumphrey v. J. A. Jones Construction Co., 94 N.W. 2d 737, decided by the Iowa Supreme Court.)

The court set aside an award that had been made by a lower court. The Iowa Supreme Court ruled that a damage suit could not have been maintained against the government under the Federal Tort Claims Act, because there was no negligence on the part of the government and the contractors were entitled to the same immunity from suit as the government itself. But immunity does not extend to a contractor who has been guilty of negligence, because he is not then protected by the terms of his contract. The government has no right to authorize a contractor to proceed negligently.

The court refers to the decision by the United States Supreme Court in the case of Yearsley v. W. A. Ross Construction Co., 309 U.S. 18, 60 S.Ct. 413, 414, 84 L.Ed. 554. There defendant had done some work in the Missouri River under a contract with the government which caused a change in the current of the river and resulted in washing away part of plaintiff's land. In that case Chief Justice Hughes, after pointing out that the contract was authorized and the work done in accordance with it, said: "In that view, it is clear that if this authority to carry out the project was validly conferred, that is, if what was done was within the constitutional power of Congress, there is no liability on the part of the contractor for executing its will. . . . Where an agent or officer of the government, purporting to act on its behalf, has been held to be liable for his conduct causing injury to another, the ground of liability has been found to be either that he has exceeded his authority or that it was not validly conferred."

As to the claim that the damage to plaintiff's lands constituted a taking without due process of law and without compensation, Judge Hughes said that, if that were true, the government must be regarded as having impliedly promised to pay just compensation, and a claim would have to be filed in the Court of Claims. But in no event, said the chief justice, was there any ground for holding liable the agent of the government who is simply acting under proper authority.

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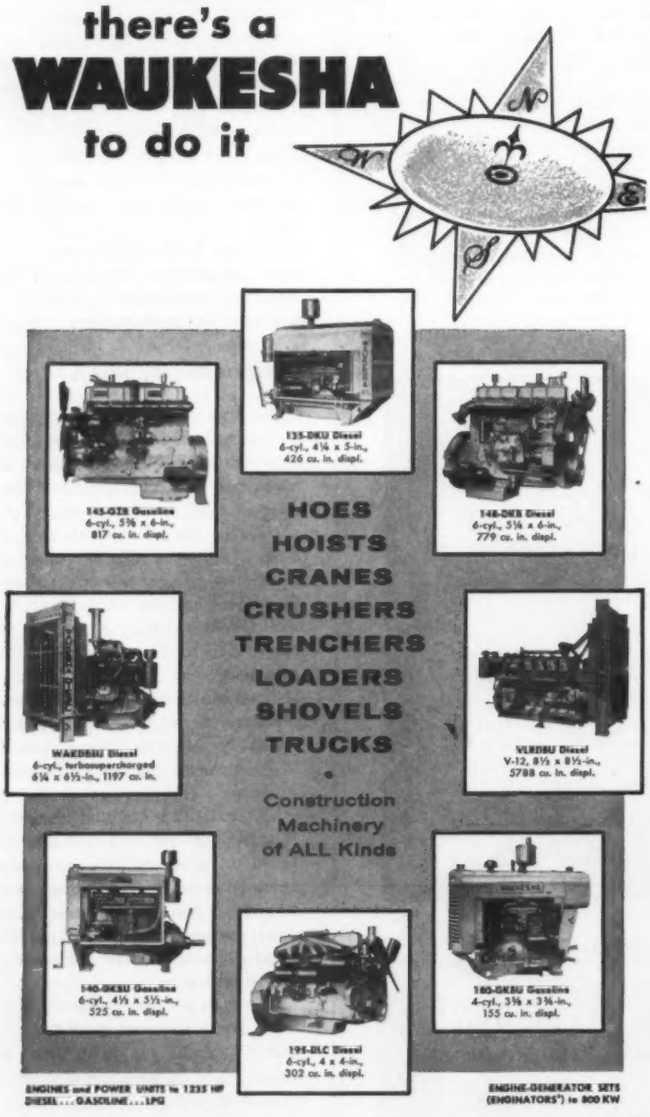

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*Firestone T.M.

Men take cover behind equipment during blasting at Barkley Dam Project

Barkley Dam contractor protects $2,000,000 worth o

GULF MAKES THINGS

Barkley Dam is a key unit of the vast Barkley Project—the development of the Cumberland River Basin for flood control, navigation improvement, and the production of hydroelectric power.

Tecon Corporation of Dallas, Texas, is building the lock and canal for improvement of navigation between the Cumberland and Tennessee rivers in Kentucky. Their $16,700,000 contract calls for the construction of a lock with a chamber having a clear dimension of 110 by 800 feet, and a normal lift of 52 feet. Some million cubic yards of dirt and rock must be moved and 550,000 yards of concrete poured. Equipment, assembled at th job site, is worth about $2,000,000.

John O'Hearn, Project Manager of Tecon, is in charg of the lock and canal construction. "One of the firs moves we made on this project was to set up a simplifie routine to protect our equipment through proper lubri cation," he says. "A Gulf Engineer made a survey of ou equipment, and came up with a program to lubricate virtually everything with three basic Gulf lubricants.

"Our only crankcase lubricant is Gulf Super Duty Motor Oil. Our one general purpose grease is Gulfcrown

Consolidation of Gulf lubricants in a central supply area helps speed up equipment servicing on major projects like this one.

John O'Hearn (left), Project Manager, Tecon Corporation, Dallas, Texas, discusses equipment performance on the job with S. P. McCracken, Gulf Sales Engineer.

Dam Project

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equipment with only 3 Gulf lubricants . . .

RUN BETTER!

Grease E.P. And our basic gear lubricant—for everything from gear boxes on shovels to enclosed gears in concrete mixers—is Gulf Multi-Purpose Gear Lubricant.

"A simplification program like this results in more than just good lubrication," says Mr. O'Hearn. "The engineering help we get from Gulf—plus prompt deliveries—add up to a lot of extra dollars in our pockets."

On your next project, see how Gulf makes things run better! Meanwhile, just call your nearest Gulf office, or write for 88-page "Gulf Contractors' Guide"—the maintenance "bible" for heavy equipment.

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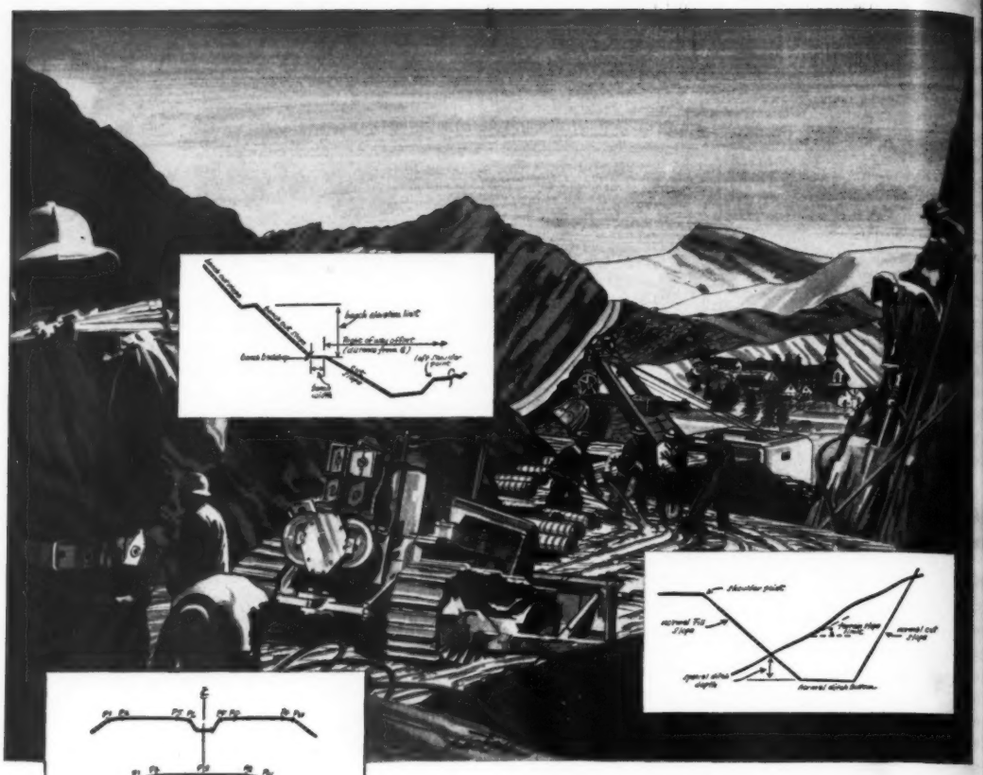

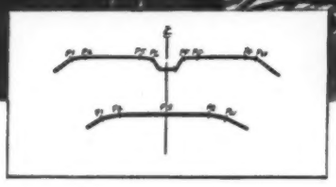

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LGP-30

Electronic computer makes the decisions in first complete highway design program

Now, for the first time, a complete highway design program has been formulated for computer operation. Developed for exclusive use on the low-cost, large-capacity Royal Precision LGP-30, the new program allows you to design any type of highway—including county roads, single-lane primary or dual-lane interstate systems.

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All you require to compute your desired roadbed is raw field data, design constants and semi-permanent data. And you can change highway types merely by selecting the proper highway code plus the correct template.

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Royal Precision Corporation

Royal Precision is jointly owned by the Royal McBee and General Precision Equipment Corporations. LGP-30 sales and service are available coast-to-coast, in Canada and abroad through Royal McBee Data Processing offices. For complete specifications on the LGP-30 and all the facts on the new highway design program, contact your nearby Royal McBee Data Processing Representative, or write

ROYAL McBEE CORPORATION, data processing division, Port Chester, N. Y.

For more facts, use Request Card at page 18 and circle No. 301

Prestressed-concrete group formed in Texas

■ The Prestressed Concrete Manufacturers Association of Texas has recently been formed. It has headquarters at 114 W. Eighth St., Austin. President of the association is Bob Carr, who is president of the Texas Concrete Co., Inc., Victoria.

Members of the new association are: Atlas Structural Concrete, Inc.; E. J. Baass Bros. Concrete Co.; Crowe-Gulde Prestressed Concrete Co.; Everman Products, Inc.; HI-Stress Division of Anchor-Wate Co.; Lufkin Concrete Co.; Prestressed Structures, Inc.; Texas Concrete Co., Inc.; Span, Inc.; Texas Quarries, Inc.; Texcrete Structural Products Co.; and Weico Corp.

Analysis of statically indeterminate structures

■ The new fourth edition of "Analysis of Statically Indeterminate Structures," by Clifford D. Williams, provides the reader with a firm grounding in the basic principles and concepts of the actions of structural members subjected to load, and reflects many changes made to simplify methods of analysis.

Chapters discuss the slope and deflection of beams, slope and deflection of trusses, single-span frames and arches; moment distribution; continuous and redundant trusses; secondary stresses in trusses; columns; column analogy; and multiple-span rigid frames. A list of problems appears at the end of each chapter.

The book sells for $9.25 from the International Textbook Co., Scranton 15, Pa.

Bulletin on lime-flyash, lime as soil stabilizers

■ Six papers on "Lime and Lime-Flyash as Soil Stabilizers" are contained in the Highway Research Board's Bulletin 231. Priced at $1.60, the bulletin may be purchased from the HRB, 2101 Constitution Ave., Washington 25, D. C.

Subjects discussed are a pozzolanic reactivity study of flyash; the impact of stabilization of loess with quicklime on highway construction; experimental lime stabilization in Nebraska; stabilization of soils with lime, lime-flyash, and other lime reactive materials; activation of the lime-flyash reaction by trace chemicals; and the effect of number of test specimens on test results on slag-lime-flyash mixtures.

List of scholarships for civil engineering grads

■ A survey of graduate scholarships, fellowships, and assistantships available to civil engineering students in 1960 has been prepared by Chi Epsilon, national civil engineering honor fraternity. The graduate programs include over 500 individual awards.

Single copies of the survey are available from Michael A. Spronck, member, Supreme Council, Chi Epsilon Fraternity, Martinsville, N. J.

THE LARGEST CONCRETE PIPELINE WYE to be installed in an ocean outfall is readied for placement five miles out and nearly 200 feet below the surface near El Segundo, Calif. The wye is part of the ocean outfall which starts at the City of Los Angeles Hyperion Treatment Plant and heads directly out into the Pacific. United Concrete Pipe Corp. made the wye at its Long Beach, Calif., plant. It is basically mortar lined and coated steel plate. Precast-concrete bell ends were welded to the legs and spigot ends to the barrel. The rest of the wye was gunited inside and out, except for a vertical bulkhead structure.

The Surveyor's Notebook

Reporting on Unusual Surveying Problems and Their Solutions

Notekeeper: W. & L.E. Gurley, America's Oldest Engineering Instrument Maker

Optical Plummet solves problem on Niagara Power Project

Frank Dickey (r.) checks Gurley Optical Plummet Transit on Niagara Power Project job.

"Sometimes a seemingly little thing can make a big job easy," says Frank Dickey, Project Engineer on the Niagara Power Project for Channel Constructors—a joint venture of Peter Kiewit Sons' Co., Morrison-Knudsen Co., Perini Corp., and Walsh Construction Co.

"We had an unusual problem here on excavations for the 500-foot-wide channel which will handle the water for the new Niagara hydroelectric plant. The conduits will pick up water from the Niagara River a couple of miles above the Falls and carry it underground through the city to an open channel, reservoir and 2,190,000-kilowatt power plant located several miles down the river.

"The channel had to be cut from dolomite. We decided to line drill the full 105-foot depth at one time, using 6-inch diameter holes on 5-foot centers. It was our intent to line drill the entire job, some 1600 holes, before any of the excavation was finished to grade. This made it necessary to devise a method of checking the holes for plumb from the surface so as to be sure that they did not deviate enough to get outside the tolerance allowed by the specifications.

"We thought of several ways to do this but none very practical, until one of the men mentioned having used a Gurley Optical Plummet Transit on another kind of job up in Canada. We decided to try the 'bobless transit' here.

"We set up over the opening; then leveled the instrument with the North plate bubble over two opposing leveling screws. Then we sighted in the Optical Plummet and started moving the other two opposing leveling screws until we were able to pick up the light—by means of the 'OP'—from a dime store flashlight which had been lowered into the hole by a string.

"While moving the two opposite screws, we constantly checked the North plate vial to make sure that it remained level throughout the movement. After we picked up the light from down the hole, we moved the telescope until its bubble was in the center. When this was established, we read the vertical circle—this giving us the angle at which the hole had been drilled.

"This proved to be accurate and a fast system for checking the holes and undoubtedly gave us a better job than we could have otherwise obtained.

"This use of the 'OP' is a special case," Mr. Dickey added. "But I'll bet there will be many other jobs that the 'OP' can lick. For years I cussed the plumb bob, especially when the wind was blowing...always wished someone would do something about it."

You, too, can do something about the plumb bob problem. Gurley *built-in* optical plummets eliminate outmoded bobs...save set-up time...improve accuracy. *Bulletin OP-100 gives complete details on two models available.*

"Tips from The Surveyor's Notebook": *We have collected the most helpful, most discussed pages from Series One and Two of "The Surveyor's Notebook" in one 20-page book. These valuable field suggestions will help you use your own instruments with greater success. Write for your free copy.*

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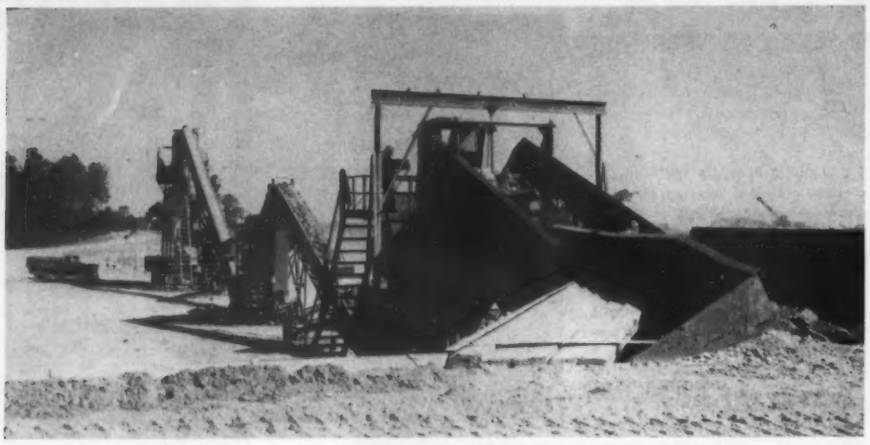
Engineering and Surveying Instruments, Hydrological and Meteorological Instruments, Paper Testing Instruments, Optical Instruments, Reticle Manufacturing Facilities, Standard Weights and Measures

For more facts, use Request Card at page 18 and circle No. 302



Reduction of rock at the Nello L. Teer quarry in Raleigh, N.C. is handled by this portable crushing plant with 200-tph capacity.

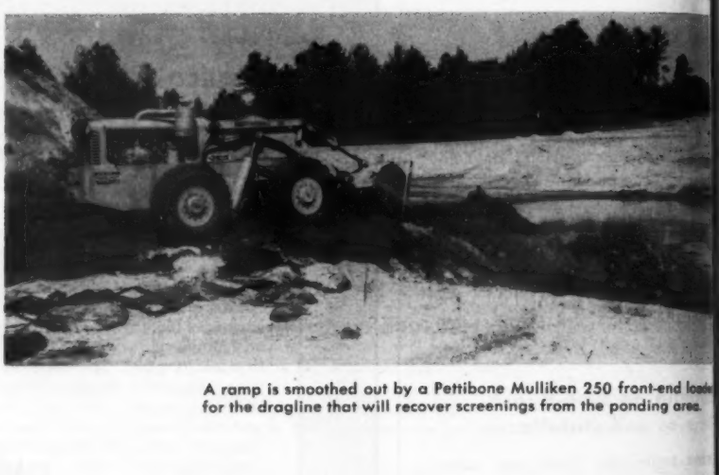
Portable crushing plant handles quarry operation

A quarry set up at Raleigh, N. C., by Nello L. Teer Co., Durham, is supplying aggregate requirements for the company in the Durham-Raleigh, N. C., area, as well as commercial aggregate. The quarry is using a portable crushing plant, with a 200-tph capacity, to turn out No. 4 and No. 7 stone sizes. Screenings are obtained from a settling pool and stockpiled by a dragline.

Teer has two Euclid rear-dumps, loaded by a Northwest 80-D shovel, to transfer t Telsmith Vibro-Kin terial pas falls down inch-wide neath th crusher. screen a crusher is conveyor, portable veyor.

This in the mat crusher 1½-inch crusher u Telsmith crusher f remainin the scree which eit ning from other ta right an The take ever the crusher

Screenings are removed from the triple-deck Telsmith screens atop the storage bins by the tailing pipe, right. The pipe discharges in a ponding area, where screenings are allowed to settle for recovery. Water from the pond is pumped to the screens.



A ramp is smoothed out by a Pettibone Mulliken 250 front-end loade for the dragline that will recover screenings from the ponding area.

DRILL MASONRY *at Greatest Savings — 50, 60, 70%*
with NEW Truco Portable Diamond Drilling Equipment

New Model B
- Holes up to 14"
- Electric or Air
- 6 Power options
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WORLD'S MOST VERSATILE

New Model S Drill Stand and Hand Drill Motor
- Holes up to 5½
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LOW COST THRIFT CHAMP

New Drill Kit
- Holes up to 1½"
- Wt. only 17½ lbs.

HANDY LITTLE DANDY

Truck mounted unit swings down into position for accurate, vertical drilling wherever a truck can go. Electric, air or gasoline power.

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Truco Original Diamond Drill Bits revolutionized masonry drilling by proving savings up to 70%. Sizes ¼" through 20" O.D. Standard lengths 4½" and 12". Other sizes and lengths to order. Full line of accessories.

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10 NEW FEATURES of use, economy, performance

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Clean, accurate holes ¼" to 20"

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FROM FLORIDA TO BAFFINLAND

CIMCO TWIN BIN and BUCKET team cut concrete costs $9.75 per cubic yard.

BUY **CIMCO** BUY
LOW-PRICED
BATCHERS-BUCKETS
For complete information, specifications and prices on all CIMCO products, write: CIMCO, Box 422, Marshalltown, Iowa

For more facts, circle No. 304

A Michigan 175A front-end loader is used to load a truck-trailer with stockpiled screenings.

Working in the quarry are two Gardner-Denver Air Tracs powered by two Chicago Pneumatic 600-cfm compressors. The 2½-inch holes are sunk 20 feet on a 5½×5½-foot spacing.

transfer the blasted granite to the Telsmith 42-inch grizzly that feeds a Vibro-King 4-inch screen. The material passing through this screen falls down a chute onto a short 36-inch-wide conveyor running from beneath the Telsmith 30×42 jaw crusher. Material running off the screen and through the primary crusher is also picked up by the short conveyor, which end-dumps onto a portable Barber-Greene 30-inch conveyor.

This inclined conveyor transfers all the material from the primary crusher setup to another vibrating 1½-inch screen above the secondary crusher unit. The runoff falls into the Telsmith Gyrasphere 489S secondary crusher for additional reduction. The remaining material passing through the screen falls into a 2-way chute, which either feeds the conveyor running from beneath the crusher or another takeoff conveyor running at right angles to the plant conveyors. The takeoff conveyor is used whenever the sizes of the secondary crusher are required.

When a flap gate in the 2-way chute is closed, the material at this setup is carried by the secondary crusher conveyor to a second Barber-Greene inclined conveyor.

Storage bins

The portable conveyor transfers the material leaving the secondary crusher to triple-deck vibrating Telsmith screens located atop the three storage bins. These screens are varied according to the size of stone being manufactured. Material running off these screens is chuted down into a third Telsmith 48FC Gyrasphere crusher. Here, the stone is further reduced and passed onto a 24-inch return conveyor that discharges onto the main conveyor feeding the storage-bin screens.

The various sizes are then sorted and deposited in one of the three 23-cubic-foot loading bins. A system of chutes is used for this operation. The bins are manually operated to charge trucks that haul to a job, a customer, or to stockpiles.

(Continued on next page)

Hobbs HOUR METERS

For better performance and longer service from your equipment, plan maintenance on operating TIME . . . you'll also set up a realistic basis for renting and leasing, service contracts, buying and selling. Be sure with Hobbs electric timing instruments — revolution counters can't do the job! Available for ALL your equipment: d-c meter for engine or battery-powered units . . . a-c meter for line-powered equipment.

● *Manufacturers also of pressure switches . . . shock-mounted head, tail and dash lights . . . indicator, instrument and warning lights. Distributors in principal cities . . . WRITE FOR CATALOG 600.*

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A DIVISION OF STEWART-WARNER CORPORATION
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ESSICK
VIBRATING COMPACTORS

ESSICK VR-72 VIBRATING COMPACTOR
COLTON-RIVERSIDE FREEWAY—CALIFORNIA

SAVED $2,400 PER MONTH IN RENTAL CUT COMPACTION COST.....
...FROM 9¢ TO 2½¢ PER YARD

E. L. Yeager Co., Altfillisch Const. Co., and Lowe and Watson (Joint Venture) "On the Colton-Riverside Freeway, compaction requirements were 90% of California AASHO on fill material made up of silty clay with occasional sand strata. We had been compacting 12,000 yards per 9 hour day for as high as 9¢ per yard with both a 75 ton and a 50 ton pneumatic tired roller, and two 5 x 5 sheepsfoot rollers pulled by D-8 Cats.

"We replaced the pneumatic rollers, sheepsfoot rollers and a D-8 with the Essick 72" VR-72-T Vibrating Compactor and compacted 8,000 cubic yards in a 9 hour day with the single roller, and cut our compaction cost to as low as 2½¢ per yard. We saved $2,400 per month in rental alone and were able to meet or better the 90% specs in one pass*.

HIGH-FREQUENCY VIBRATION

"With our previous equipment, moisture had to be 11 - 12% or we did not meet some of the compaction tests. With the Essick VR-72, moisture content was not critical as we met the specs with moisture as little as 6 - 7%. The Essick VR-72 Vibrating Compactor was a big help in making this a profitable job for us."

* ESSICK HIGH-FREQUENCY VIBRATING COMPACTORS ARE CUTTING THOUSANDS OF DOLLARS DAILY FROM CONTRACTORS' COSTS! ASK FOR PROOF.

SEE YOUR ESSICK DEALER NOW FOR A DEMONSTRATION

ALSO 14 MODELS OF TANDEM ROLLERS FROM 1/2 TO 14 TONS

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Elizabeth, New Jersey

Affiliated with THE T. L. SMITH CO., Milwaukee, Wisconsin

For more facts, use Request Card at page 18 and circle No. 306

This Euclid rear-dump delivers blasted rock to the plant's Telsmith 42-inch grizzly that feeds the primary crusher. Two Euclids are assigned to this haul job.

(*Continued from preceding page*)

Screenings washed off the storage-bin screens are led by pipeline to a ponding area where they are allowed to settle for recovery. A Lima crane, equipped with a dragline bucket, is used to excavate the ponding area and stockpile the screenings. Two front-end loaders, a Pettibone Mulliken 250 and a Michigan 175A, are used to load trucks from the various stone or screenings stockpiles.

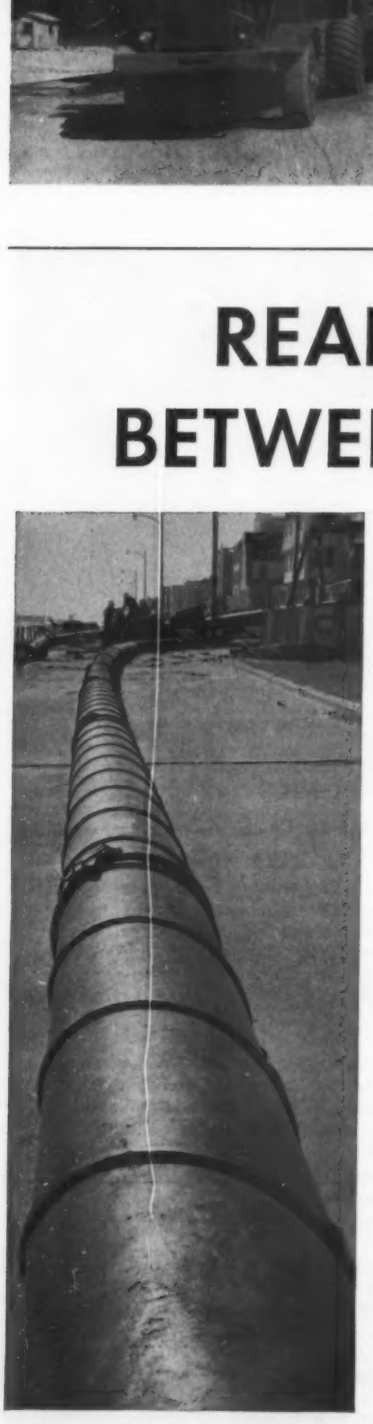
Teer has two Gardner-Denver Air Tracs powered by a pair of Chicago Pneumatic 600-cfm compressors to sink the 2½-inch-diameter holes in 20-foot lifts. Brunner & Lay carbide-insert drill bits are used to sink the drill holes in a 5½×5½-foot pattern through the granite. Holes are loaded with 40 per cent Atlas dynamite for blasting. The Northwest shovel then loads the blasted rock to the pair of Euclid rear-dumps.

It is estimated that there is enough granite at this quarry for about 20 years of normal operation. Granite has been found at depths exceeding 150 feet. Teer will, in the future, install a permanent type of aggregate plant.

Teer owns and operates six other quarries throughout North Carolina, another in Maryland, and one in Guatemala, Central America. Glenn W. Moore is the superintendent for Teer at the Raleigh quarry.

THE END

READ The Facts BETWEEN THE LINES!



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For more facts, use Request Card at page 18 and circle No. 307

Convention Calendar

February 8–9 Concrete Short Course
Course, Vanderbilt University, Nashville, Tenn. William H. Rowan, acting dean, Box 1603, Station B, CSC, Vanderbilt University, Nashville 5, Tenn.

February 11–12 Mississippi Highway Conference
Sixth Annual Conference, Center for Continuation Study, University of Mississippi, Oxford, Miss. W. M. Jones, Jr., director, Department of Conferences and Institutes, MHC, University of Mississippi, Oxford, Miss.

February 15–19 National Sand and Gravel Association and National Ready Mixed Concrete Association
Forty-fourth NSGA Annual Convention, Thirtieth NRMCA Annual Convention, Biennial Show, Conrad Hilton Hotel and Chicago Coliseum, Chicago, Ill. V. P. Ahearn, executive secretary, NSGA-NRMCA, 1325 E. St. N.W., Washington 4, D. C.

February 18–20 National Society of Professional Engineers
Winter Meeting, Broadview Hotel, Wichita, Kans. Kenneth E. Trombley, NSPE, 2029 K St. N.W., Washington 6, D. C.

February 22–24 National Crushed Stone Association
Forty-third Annual Convention and Manufacturers Division Exposition, Conrad Hilton Hotel, Chicago, Ill. J. R. Boyd, executive director, NCSA, 1415 Elliot Place N.W., Washington 7, D. C.

February 22–25 Weed Society of America
Meeting, Cosmopolitan Hotel, Denver, Colo. Richard Fosse, chairman of local arrangements, WSA, Am-Chem Products, Niles, Calif.

February 23–25 Illinois Highway Engineering Conference
Forty-sixth Annual Conference, University of Illinois, Urbana, Ill. John W. Hutchinson, assistant director, IHEC, 304 Civil Engineering Hall, University of Illinois, Urbana, Ill.

February 25–26 Illinois Traffic Engineering Conference
Twelfth Annual Conference, University of Illinois, Urbana, Ill. John E. Baerwald, director, ITEC, 401 Civil Engineering Hall, University of Illinois, Urbana, Ill.

March 1–2 Kentucky Highway Conference
Conference, University of Kentucky, Lexington, Ky. D. K. Blythe, head, Civil Engineering Department, KHC, University of Kentucky, Lexington, Ky.

March 1–3 College of the Pacific Highway Conference
Conference, College of the Pacific, Stockton, Calif. Adelbert Diefendorf, dean, School of Engineering, CPHC, College of the Pacific, Stockton, Calif.

March 3–4 Highway Engineering Conference of the University of Colorado
Thirty-third Annual Conference, University Memorial Center, Boulder, Colo. Roderick L. Downing, director, HECUC, 207 Engineering Bldg. No. 1, University of Colorado, Boulder, Colo.

March 7–11 American Society of Civil Engineers
Meeting, Jung Hotel, New Orleans, La. W. H. Wisely, executive secretary, ASCE, 33 W. 39th St., New York 18, N. Y.

March 8–9 Utah Highway Engineering Conference
Conference, Union Bldg., University of Utah, Salt Lake City, Utah. Preston D. Linford, chairman, Civil Engineering Department, UHEC, University of Utah, Salt Lake City 12, Utah.

March 14–15 Georgia Highway Conference
Conference, Architecture Auditorium, Georgia Institute of Technology, Atlanta, Ga. Richard Wiegand, director, GHC, Short Courses and Conferences, Georgia Institute of Technology, Atlanta 13, Ga.

March 14–17 American Concrete Institute
Fifty-sixth Annual Convention, Commodore Hotel, New York, N. Y. Charles L. Cousins, public relations director, ACI, P. O. Box 4754, Redford Station, Detroit 19, Mich.

March 14–18 National Association of Corrosion Engineers
Sixteenth Annual Conference and Corrosion Show, Memorial Auditorium, Dallas, Texas. T. J. Hull, executive secretary, NACE, 1061 M & M Bldg., Houston 2, Texas.

March 16–18 Short Course for Superintendents and Operators of Water and Sewerage Systems
Twenty-third Annual Course, Louisiana State University, Baton Rouge, La. Fred H. Fenn, dean, College of Engineering, Louisiana State University, Baton Rouge 3, La.

March 17–27 International Construction Exhibition
Second International Exhibition, Palace of the National Industrial and Technical Center, Paris, France. Exhibition Secretariat, ICE, 1, Avenue Niel, Paris XVII, France.

March 20–26 American Congress on Surveying and Mapping and American Society of Photogrammetry
Meeting, Shoreham Hotel, Washington, D. C. C. E. Palmer, secretary-treasurer, ACSM-ASP, 1515 Massachusetts Ave. N.W., Washington 5, D. C.

March 21–24 Associated General Contractors of America, Inc.
Forty-first Annual Convention, Masonic Temple, San Francisco, Calif. James D. Marshall, executive director, AGC, 1957 E St. N.W., Washington 6, D. C.

March 23–25 Northwest Highway Engineering Conference
First Combined Conference of Northwest Conference on Road Building and the Northwest Traffic Engineering Conference, Oregon State College, Corvallis, Ore. G. S. Paxson, assistant state highway engineer, Oregon State Highway Department, Salem, Ore.

March 27–April 1 Greater New York Safety Council
Thirtieth Annual Safety Convention and Exposition, Hotel Statler, New York, N. Y. Paul F. Stricker, executive vice president, GNYSC, 60 E. 42nd St., New York 17, N. Y.

March 29–31 South Dakota Highway Short Course
Course, Union Bldg., South Dakota State College, Brookings, S. Dak. Emory E. Johnson, SDHSC, South Dakota State College, Brookings, S. Dak.

March 30–April 1 Assoc. of Highway Officials of the North Atlantic States
Thirty-sixth Annual Convention, Bellevue-Stratford Hotel, Philadelphia, Pa. Kenneth D. Rice, executive secretary, AHONAS, 1035 Parkway Ave., Trenton 25, N. J.

April 5–7 Building Research Institute
Spring Conferences, Statler-Hilton Hotel, New York, N. Y. Harold Horowitz, assistant director for technical programs, BRI, 2101 Constitution Ave., Washington 25, D. C.

April 5–7 Ohio Highway Engineering Conference
Conference, Ohio Union, Ohio State University, Columbus, Ohio. Emmett H. Karrer, director of conference, Ohio State University, 190 W. 17th Ave., Columbus 10, Ohio.

April 6–8 New York State Association of Highway Engineers
Meeting, Hotel Syracuse, Syracuse, N. Y. Alfred Lyng, convention chairman, NYSAHE, 444 Van Duzee St., Watertown, N. Y.

April 18–21 Purdue Road School
School, Purdue Memorial Center, Purdue University, Lafayette, Ind. J. F. McLaughlin, associate professor of civil engineering, School of Civil Engineering, Purdue University, Lafayette, Ind.

April 25–29 American Welding Society
Forty-first Annual Convention and Welding Exposition, Biltmore Hotel and Great Western Exhibit Center, Los Angeles, Calif. Information Center, AWS, 33 W. 39th St., New York 18, N. Y.

April 28–30 Texas Aggregates Assoc. and Texas Ready Mix Concrete Assoc.
Meeting, Hilton Hotel, El Paso, Texas. Ray L. Cain, executive secretary, TAA-TRMCA, 201 Perry Brooks Bldg., Austin, Texas.

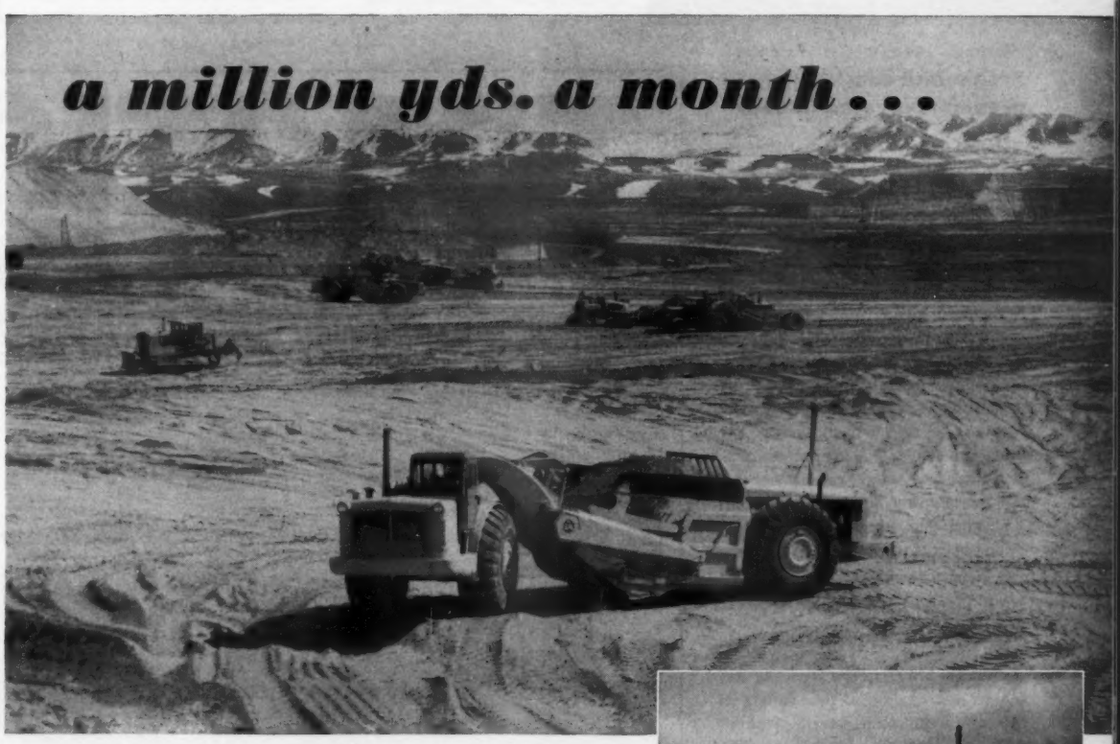
NSGA-NRMCA move

■ The National Sand and Gravel Association and the National Ready Mixed Concrete Association have moved to 1411 K St. N. W., Washington 5, D. C.

HRB analysis of state highway organizations

■ Special Report 51 from the Highway Research Board is entitled "State Highway Administrative Organizations: An Analysis." The 80-cent bulletin is available from the HRB, 2101 Constitution Ave., Washington 25, D. C.

Topics discussed include the types of administrative direction—executive and commission—and the advantages and disadvantages of various types. An appendix lists the directing organizations of state highway departments.

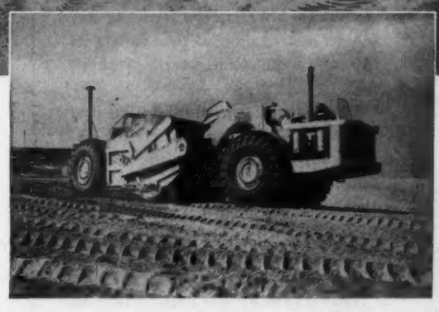


moved by Euclid "Twins"

At a mining operation in central Wyoming, a fleet of 18 Euclid scrapers is removing overburden from uranium ore at a rate of a million cu. yds. a month... nearly 21 million cu. yds. will be moved to uncover the ore body. It's a big, tough job to move that quantity of heavy sand over a mile of adverse grades up to 12%.

Maco Construction Co. of Rawlins, Wyoming, contractor on this stripping project, bought 12 Twin-Power "Euc" Scrapers of 24 yd. struck capacity to maintain high speed production. With two engines and all-wheel drive, these scrapers have the power and traction needed to move big loads up steep grades from pit to dumping area. Twin-Power is paying off in the big performance of Maco's five TC-12 Euclid crawler tractors, too—they're used for push loading this all-Euclid fleet of scrapers.

Wherever big tonnages must be moved on mine, quarry, industrial and heavy construction work, Euclid equipment provides more work-ability and better return on investment. The dealer in your area will be glad to supply facts and figures on Euclid rear-dump and bottom-dump haulers, scrapers, crawler tractors and front-end loaders.



Big power and big capacity pay off in big production... Euclid TC-12 Crawler Tractor has 2 engines that deliver 425 net h.p.... "Twin" Scraper of 24 yd. struck capacity also has 2 engines (563 total h.p.) and all-wheel drive with separate Torqmatic Drives for each axle.

EUCLID Division of General Motors, Cleveland 17, Ohio

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FOR MOVING EARTH, ROCK, COAL AND ORE

For more facts, circle No. 308→

Inside the cofferdam built for construction of a new third lock on the Ohio at Louisville, Ky., Chicago Pneumatic track drills and CP drills on rails sink 2½-inch blast holes into the seamy limestone stratum. Varying patterns are being used to control breakage and protect the line-drill face during excavation for the lock.

Dredging and excavation work is subbed by contractor in dovetailing operations for . . .

A new lock on the Ohi

A new lock to improve navigation facilities, and to provide for a more rapid locking than is now possible, is being built at Lock and Dam No. 41 on the Ohio River at Louisville, Ky. Hardaway Contracting Co., Columbus, Ga., the general contractor on this $19 million project, is building the 1,200-foot-long lock next to two existing locks along the Kentucky shore. The main lock, adjacent to th shore, has a 600-foot-long chamb Between this and the present con struction is a 360-foot auxiliary loc

Longer tows

The new lock will accommodat much longer tows than those now being handled. Tows will also move faster than at present; currently

Residential construction problems covered in book

■ John Wiley & Sons, Inc., 440 Fourth Ave., New York 16, N. Y., has issued "Residential Construction Management," by Ernest L. Buckley. The book is directed to the small businessman who is interested in enlarging his operations, and to the established builder seeking to ensure greater economy and quality in his organization.

Chapters discuss the builder's organization, land development, project preparation, the scheduling process, procurement and material control, subcontracts, sales promotion, and cost accounting. Pictures and diagrams supplement the text.

The book is priced at $7.95.

HRB report on highway investment, financing

■ Bulletin 222 from the Highway Research Board contains four papers on "Highway Investment and Financing."

The papers contain data on the fundamental problems in relating vehicle size to highway costs; pricing and financing highway services; price theory and tax equity in highway finance; and the use of economic criteria for highway investment planning.

Priced at $1.60, the bulletin may be purchased from the HRB, 2101 Constitution Ave., Washington 25, D. C.

Booklet on winners of bridge-design contest

■ New ways to use the higher strength-to-weight ratios of modern structural steels in bridge design are suggested in a 38-page booklet entitled "$44,000 Steel Highway Bridge Design Competition." The booklet illustrates structural details of the prize-winning entries in the recent contest sponsored by the American Bridge Division of U. S. Steel Corp. and judged under auspices of the American Institute of Steel Construction.

A free copy of the booklet is available upon request from the American Bridge Division, U. S. Steel Corp., Room 1831, 525 William Penn Place, Pittsburgh 30, Pa.

TRACTION when and where you want it

WITH INTERNATIONAL TANDEM-AXLE ALL-WHEEL-DRIVE CHASSIS

Start operations up to 30 days ahead of changeable spring weather with this husky INTERNATIONAL model RF-210 (6x6) chassis that's ideal for transit-mix use. Excellent flotation of the INTERNATIONAL tandem combined with the extra traction of all-wheel drive allows you to get a head start on competition.

ows have to be double-locked if they re over 600 feet long.

A dam built to the Indiana shore makes maximum lifts of 37 feet necessary for the existing locks and the one being built. Separating the dam and the lock locations is an island that provides areas for the concrete batch plant and other contractor services but presents problems in scheduling work sequences.

Drive cofferdam

In getting ready for lock excavation, Hardaway drove a 3-sided cofferdam to enclose most of the downstream portion of the lock chamber. Two cofferdam sides, one about 1,300 feet long and one about 700 feet long, were driven on the north and south sides, respectively, of the proposed lock. These were connected with a 450-foot cofferdam wall at the downstream end.

Two Manitowoc 3900 cranes started work on the north and south walls of the cofferdam from the island. Both walls parallel the existing locks; the south wall was started immediately adjacent to the north guard wall of the auxiliary lock and extended downstream.

The surge basin leading into the new lock is being formed by a 16-inch hydraulic dredge owned and operated by a subcontractor. Some of the material was used to fill cofferdam cells; the rest went to a downstream spoil area.

Cofferdam cells vary in diameter from 56 to 59 feet, with the center-to-center spacing varying from 61 to 58 feet. The U. S. Steel sheeting, also varying in lengths from 50 to 60 feet, was driven to rock by McKiernan-Terry 9-B-3 hammers mounted on the Manitowoc cranes. Hardaway used a circular steel template to position and drive the interlocking sheets for the cells. The cells were then connected by interior and exterior diaphragms.

Two small sand islands, located just downstream from the main island and north of the lock cofferdam, formed a narrow natural channel between the large island and the Kentucky shore. Construction of the cofferdam further constricted this channel and increased the rate of flow between the north cofferdam wall and the downstream sand island.

To reduce this flow, Hardaway built a temporary dike upstream, between the large island and the upstream sand island. This dike diverted the flow north of the sand islands. The southern edge of the downstream sand island will be cut back by dragline before the lock is completed so that there will be a smooth flow of water between the island and the downstream guard wall of the lock.

The cofferdam cells were filled by two methods. Hydraulic fill went into about half of them; the remaining cells were filled with material that was barged to the site.

Excavation subbed

Hardaway subcontracted all of the earth and rock excavation — amounting to 2 million cubic yards of earth and 300,000 yards of rock — to C. H. Jenkins & D. H. Wigner Construction Co., Oklahoma City.

At the upstream end of the cofferdam a 14-foot stratum of shale was exposed after the existing overburden of the island was removed. Erosion caused by the existing river flow in the channel had already exposed the underlying limestone in the downstream area of the cofferdam.

Jenkins & Wigner are using a pair of Chicago Pneumatic drills mounted on rails to handle the line-drilling into the limestone. Drills sank the 2½-inch holes with carbide-insert bits. The maximum spacing allowed between line-drill holes is 5 inches

ow you can get to the job with heaviest payloads—and ually important, get out to come back for more—with TERNATIONAL six-wheel *all-wheel-drive* chassis.

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For more facts, use Request Card at page 18 and circle No. 309

(Continued from preceding page)

Blasted rock is being dumped in a spoil area that will serve to build up the western end of the island north of the cofferdam. As the LeTourneau-Westinghouse rock wagon makes the dump, the material is leveled by a tractor-dozer.

— twice the diameter of the holes.

Chicago Pneumatic track drills, sinking 2½-inch blast holes, use ever-changing drill patterns and depths to control the breakage of the very seamy limestone stratum and to protect the line-drill face. A portable Gardner-Denver 900-cfm compressor powers the drills.

The varying lifts, which are held to a 14-foot maximum, are blasted with Hercules dynamite of varying strengths. Blasted rock is loaded by Northwest 80-D and Model 6 shovels into a fleet of three LeTourneau-Westinghouse Model C rear-dumps. These units haul the excavation to a spoil area along the western edge of the island.

Dredging operations

Pentzien, Inc., Omaha, Nebr., [illegible] other subcontractor, is using a [illegible] inch hydraulic dredge to form [illegible] surge basin leading into the [illegible] lock. Monongahela & Ohio Dredging Co., Pittsburgh, Pa., also a subcontractor, uses a dipper dredge with a 2½-yard bucket to help form the surge basin.

The hydraulic dredge pumps the excavation through a 7,000-foot-long discharge line to a spoil area downstream while the dipper dredge loads a barge. Initially, both dredges were used to excavate an access channel from the existing upstream lock approach to the concrete batch-plant location. This allowed aggregate barges to reach the plant site, where conveyors stockpiled the sand and stone. During this phase, Hardaway erected the Johnson automatic batch plant that is producing over 360,000 cubic yards of concrete for the new lock.

Personnel

Arch K. Boyle is the resident engineer and Ivan C. Uland, the assistant resident engineer for the Louisville District, U. S. Army Corps of Engineers. Col. C. C. Noble is the district engineer.

W. C. McConnel is the project manager for Hardaway. Other key contractor personnel are J .B. Abbott, office engineer; W. R. Baker, carpenter superintendent; and W. L. Mon[illegible] equipment superintendent. The superintendent for Jenkins & Wigner is D. H. Wigner. THE EN[illegible]

Gardner-Denver, Apex firms will combine

■ Apex Machine & Tool Co., Dayton, Ohio, will combine with Gardner-Denver Co., Quincy, Ill., and will become a wholly owned subsidiary of Gardner-Denver on March 1. Apex will continue to operate under the same officers, produce the same products, and sell through the same sales organization as at present.

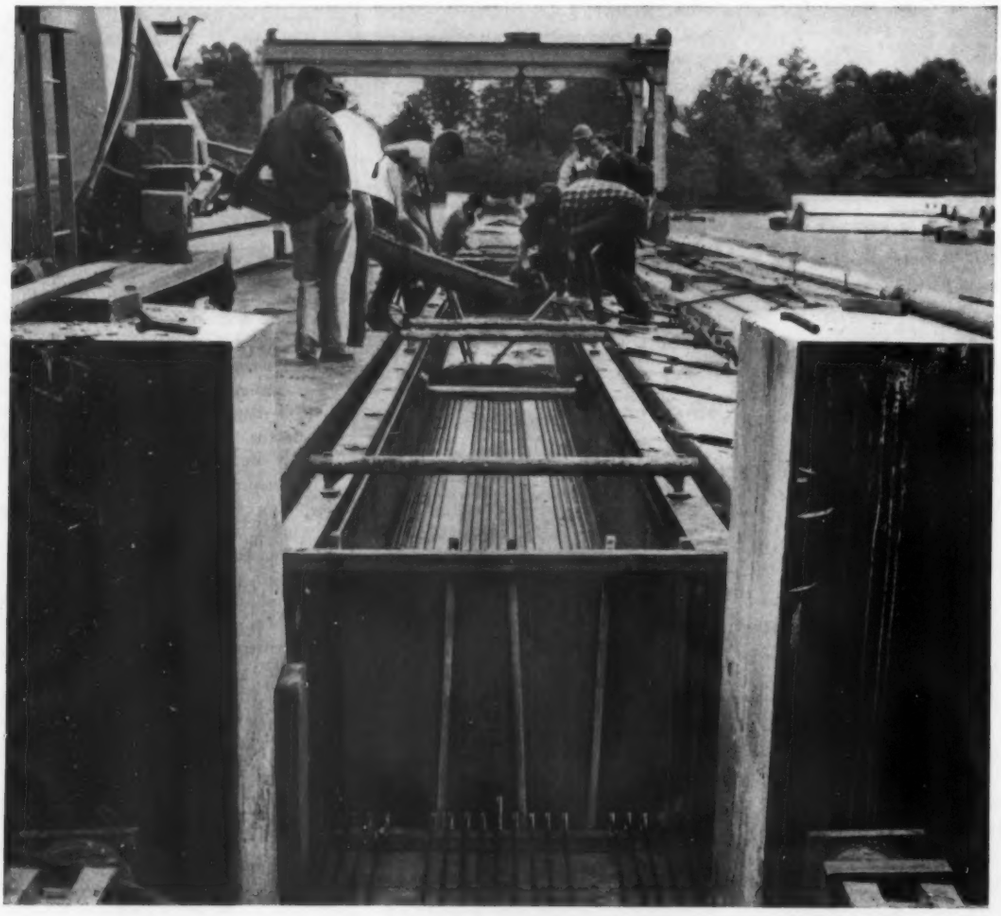
Gardner-Denver produces equipment for the construction, petroleum, general-industry, and mining fields. Apex makes screwdriver bits and sockets for power tools.

HRB report on planning of urban freeways

■ Five papers on matters that influence urban freeway planning are contained in Bulletin 230, "Trip Generation and Urban Freeway Planning," from the Highway Research Board.

Topics discussed are studies of trip generation in the nation's capital; traffic characteristics of Massachusetts Route 128; the nature of urban freeway systems; factors influencing transit and automobile use in urban areas; and a method for predicting speeds through signalized street sections.

Priced at $2.40, the bulletin may be purchased from the HRB, 2101 Constitution Ave., Washington 25, D. C.



Box beam manufacturer likes uniformity of Bethlehem Stress-Relieved Strand

This on-the-job photograph, taken at Eastern Pre-stressed Concrete Corp., Line Lexington, Pa., shows the arrangement of Bethlehem Stress-Relieved Strand in box beams. The beams were 68 ft long, 48 in. wide, and 33 in. deep. The initial stress induced was 14,500 lb per strand, using a 47-strand pattern with ⅜-in. strand.

The plant superintendent, well satisfied with Bethlehem Stress-Relieved Strand, stated: "It meets our needs in every way."

Bethlehem Stress-Relieved strand exhibits excellent uniformity of mechanical properties, fulfilling every requirement of ASTM Specification A416-57T. For full details, get in touch with the nearest Bethlehem sales office.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.
Export Distributor: Bethlehem Steel Export Corporation

BETHLEHEM STEEL

For more facts, use Request Card at page 18 and circle No. 310

Belt radios save time

Compact transmitter and receiver units keep key men in touch on 28-story building

Supervisory personnel on the job are wired for sound. Pete Dougall, extreme left, and Ted Horsh, electrical foreman, extreme right, wear receiver units on their collars. Between them, in the usual order, are carpenter foreman Charlie Jackson, mason foreman Kenny Johnson, and project engineer Irv Dahlstrom, all wearing ear receivers.

A superintendent often has to be in two places at one time. This seemingly impossible feat has been made practicable with the aid of pocket-sized 2-way radios.

Wearing the radio unit on his belt, a superintendent can check the progress of work on the twentieth floor of a building while giving instructions to the mason foreman on the fifth floor. At all times, the superintendent is in contact with the engineer, the office manager, and the various foremen.

Big bank building

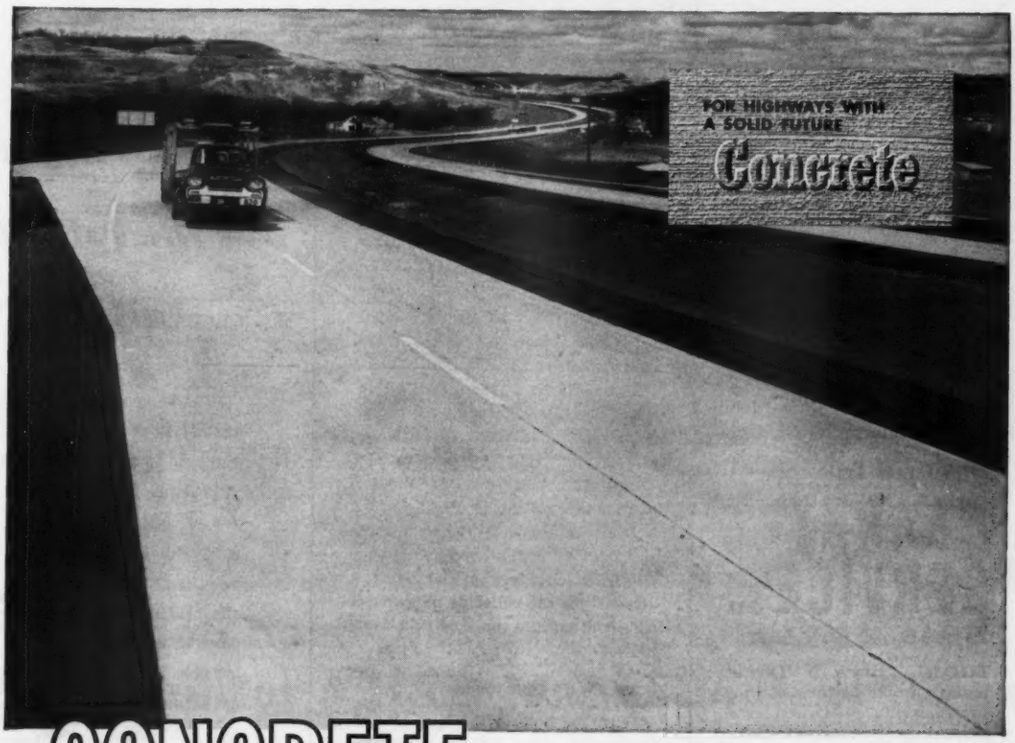
Naugle-Leck, Inc., of Minneapolis found the RCA transistor radio system to be a great timesaver during construction of the multimillion-dollar First National Bank Building in Minneapolis. The 28-story building, scheduled for completion early this year, has a structural-steel frame sheathed in a stainless-steel and glass curtain wall for the lower 5 floors; the upper floors are aluminum and glass. Rising 380 feet from sidewalk level, the building is the second tallest in the city. (Foshay Tower is the tallest.)

Where's the super?

A 28-story building with 400,000 square feet of floor space is big enough to get lost in. A superintendent can spend a lot of time just try-

(Continued on next page)

Pete Dougall, superintendent on the 28-story First National Bank Building in Minneapolis, uses a radio transmitter carried on one side of his belt and a microphone to contact the base station on the third floor. A receiver unit on the other side of his belt and a receiver attached to his collar pick up messages directed to him. Use of the RCA Personalfone radios speeded progress of the job.



CONCRETE will save taxpayers $2,835,000 on the first 39 miles of North Dakota's Interstate 94!

North Dakota chose concrete to get the big savings where they count most—on upkeep

On the 39-mile stretch between Jamestown and Valley City—and for other sections of the Interstate System—North Dakota had good reasons for choosing concrete. *Concrete means tax savings and real dollar value.*

In North Dakota it was found that by comparing amortized first costs plus surface maintenance costs for concrete and asphalt, *concrete will save $72,200 per mile in 35 years.*

Estimates were based on maintenance costs shown in an official study of pavements in 28 reporting states. And because the asphalt design being considered would require two resurfacings, this cost was figured in, too. Bureau of Public Roads life expectancy studies gave the schedule for such resurfacings. Final figures evidenced impressively the sizable year-after-year savings provided by concrete!

The reasons are simple enough! Concrete needs no special seal coatings, no periodic resurfacings—both costly items. There's far less routine maintenance, too.

Concrete is nonflexible . . . it has *beam* strength it never loses. In fact, concrete grows stronger year by year. Modern, air-entrained concrete gives built-in protection against damage caused by freezing and thawing.

Concrete highways 35 years old are a matter of record. Today's modern concrete promises 50 years and more of smooth going for drivers. Thrifty concrete on the Interstate System leaves more funds for other highways. Concrete means true economy for taxpayers, both today and in the future. It's easy to see why concrete is the preferred pavement for important highways.

PORTLAND CEMENT ASSOCIATION

A national organization to improve and extend the uses of concrete

For more facts, use Request Card at page 18 and circle No. 311

(Continued from preceding page)

ing to find his foremen. With the belt radios, however, foremen and superintendent are constantly in touch; they can get answers when they need them.

At times, the radios are a handy means of communication between the transitman and his rodman. When the man on the transit cannot see the man setting the point, the transitman's signals are relayed by means of the portable radios.

Base station

The base station of the communications system is set up in the field office on the third floor of the building. Its main component is an RCA 25-watt transmitter-receiver unit. Called the Carfone 150, the unit is about the size of a table radio. Operating on a 148 to 174-megacycle band, the unit is powered by 115-volt ac current. The transmitting antenna is located in an adjoining room.

Calls relayed

Generally, all calls received from portable transmitters must be relayed by the operator of the base station (office manager Al Ryd) to the desired party. In other words, when the carpenter foreman wants to contact the superintendent on the twentieth floor, he sends his message to the base-station operator, who relays it to the superintendent. The office manager assumes the duties of base-station operator along with his regular work.

The base-station booster is necessary because the portable units put out only ½ watt of power. For short distances, however, when the parties are separated only by a floor or two, direct communication is possible.

Key men carry radios

On this job, each of the foremen, the engineer, and the superintendent carry the RCA Personalfone transistor radios on their belts. The transmitter, weighing 28 ounces, is contained by one leather case; the receiver, weighing only 14 ounces, is held by another leather case.

The batteries that power the receiver can be recharged by a special battery-charging unit. The batteries are usually recharged once a day. Transmitter batteries last about 6 months and cannot be recharged.

The operator of the belt radio speaks into a penny-sized microphone and listens to a tiny speaker, which is attached to the collar of his shirt or can be fitted into the ear like a hearing aid.

Good range

With the help of the base station, the small radios have a surprising range. The high-frequency waves can reach to any floor in the 28-story building. The waves have no trouble penetrating the thick, heavily reinforced concrete walls of the bank vault in the basement. It's even possible to contact the superintendent when he's having lunch in the next block. (In open ground in the country, the radios have a range of several miles.)

The cost of the complete installation is about $4,000. The system includes the base station, antenna, battery charger, and seven belt radios for key personnel. It also includes a remote unit to enable the electrical contractor to transmit and receive from his office. THE END

Office manager Al Ryd operates the base station in the third-floor construction office in addition to handling his regular duties. He uses the RCA 25-watt installation to relay messages, since the ½-watt power of the portable units carries only a few floors. The dark unit on the file cabinet is the Carfone 150 fixed desk station; above it, on the wood cabinet, is the electric battery recharging unit. Batteries of the portable units are recharged about once a day.

Two new B-E managers

■ Frank T. House has been appointed sales promotion manager, and Herman A. Burkhardt, publicity manager, for Bucyrus-Erie Co., South Milwaukee. D. W. Harris continues to handle public relations for the company.

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NEARBY SERVICE on Black & Decker tools. Black & Decker maintains 50 factory service branches plus authorized service stations to give your B&D tools the attention mechanical products need periodically. Keep your B&D tools in top condition, on the job all the time.

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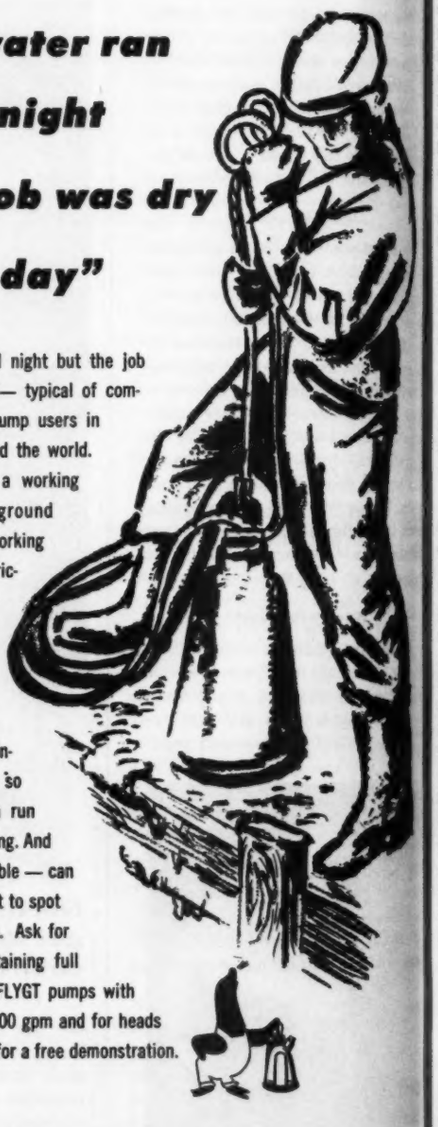

"The water ran all night but the job was dry all day." — typical of comments by FLYGT pump users in 60 countries around the world. You needn't lose a working minute draining ground water from your working site. FLYGT electric-powered, fully submersible pumps can be run day and night with virtually no supervision and little maintenance. They are so simple anyone can run them without training. And they are fully portable — can be moved from spot to spot as the job requires. Ask for our literature containing full information about FLYGT pumps with capacities up to 3100 gpm and for heads up to 220 ft. — or for a free demonstration.

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For more facts, use Request Card at page 18 and circle No. 312

NLA to award $1,000 for paper on lime

■ The National Lime Association has announced the Victor J. Azbe Lime Award contest. An award of $1,000 will be given annually for the best technical paper on lime—its manufacture, including plant or equipment design, research on its chemical and physical properties, and methods of tests for evaluating its properties and quality. The first annual award will be presented next fall.

All technical papers should be submitted by March. Further details of the contest can be obtained from the NLA, 925 15th St. N. W., Washington 5, D. C.

Bruning Co. acquires Paragon-Revolute firm

■ Paragon-Revolute Corp., Rochester, N. Y., manufacturer of blueprinting and allied reproduction equipment, has become a division of the Charles Bruning Co., Inc., Mount Prospect, Ill. The transaction was accomplished through an exchange of Bruning stock for assets of the other company.

L. Gordon Booth, president of Paragon-Revolute, remains as general manager of the new Bruning division and will become a vice president and member of the board of directors of the parent firm. The acquired company's subsidiary, Paragon-Revolute (Canada) Ltd., will continue operations without change.

H. H. Sullivan and W. L. Sullivan, founders of Paragon-Revolute, will serve as consultants of the new division.

Data on hot-mix tests, flexible-pavement design

■ "Performance and Tests of Asphaltic Concrete," Bulletin 234 from the Highway Research Board, is priced at 50 cents. It discusses the relation of densification to performance of small-scale asphaltic-concrete test sections, and the use of the Marshall stability test.

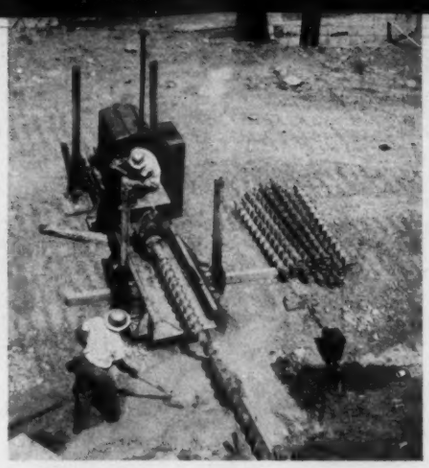
Bulletin 233, "Flexible Pavement Design Research: 1959," contains three papers: the development and performance of flexible pavement on the New Jersey Turnpike; dynamic forces exerted by moving vehicles on a road surface; and a re-evaluation of Kentucky flexible-pavement design criteria. This bulletin costs $1.

Both bulletins may be purchased from the HRB, 2101 Constitution Ave., Washington 25, D. C.

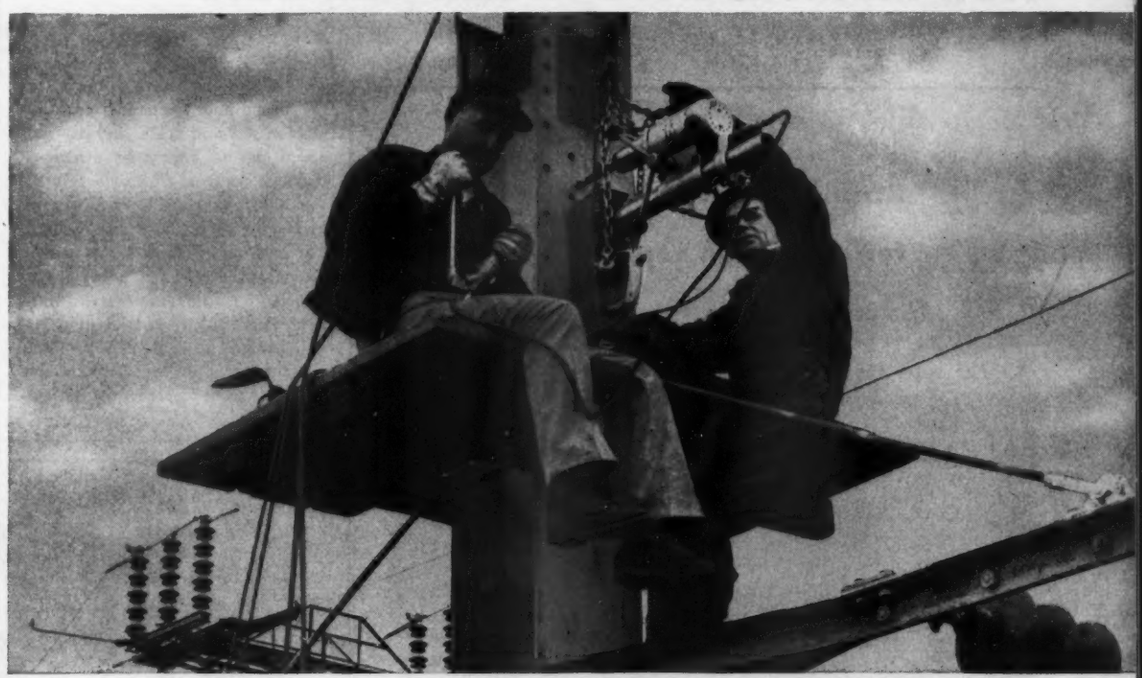
Crane Carrier buys Insley's Maxi Division

■ The Maxi Division, Insley Mfg. Corp., Los Angeles, has been purchased by Crane Carrier Industries, Inc., Tulsa. The Maxi plant in Los Angeles is being dismantled for reassembling in Tulsa, where production on the Maxi carrier has already started. The Maxi model differs from the Crane carrier in that one man operates the Maxi shovel and truck from the same seat.

For more facts, use coupon or circle No. 313→



NEAR THE ENTRANCE of the Fort Pitt Tunnel serving downtown Pittsburgh, 6-inch weep holes, ranging from 100 to 400 feet deep, are being drilled into the hillside to relieve it of the hydraulic water pressure and to eliminate the possibilities of land and rock slides on the highway below. The McCarthy 24-TD drill works with 6-foot augers, which are added until drilling depth is reached. A total of 46 holes is being drilled; 3-inch-ID perforated pipes inserted in them will carry water away.



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B&D 1¼" MAGNETIC DRILL PRESS works high overhead upside down; enables maintenance man to get into tight spots easily, rapidly.

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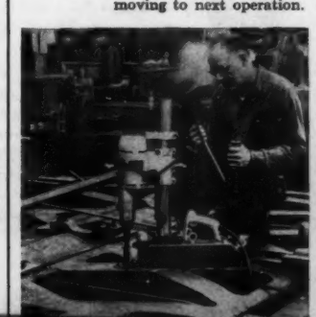

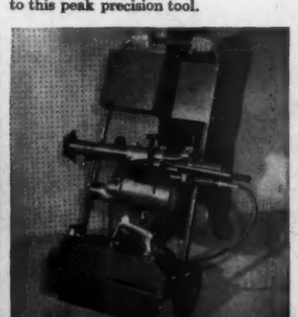

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- ☐ Send me additional information
- ☐ Send me information on the tools checked below.

Name..... Title.....

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The hydraulic dredge Talcott works in the Perquimans River near Hertford, N. C., excavating for the turning basin and channel for boats and the Navy's new amphibian jets.

New methods tried on Navy air base

Work involves dredging 3 million yards of material; contractor attempts pumping apron concrete to spreader

A big dredging job to form a turning basin and a channel for amphibian jets and boats, and parking-apron paving work that attempted pumping concrete to the paver make the Navy's new jet air-base project at Harvey Point, N. C., noteworthy. The base for the new 4-engine P6M Seamaster jet aircraft is being constructed on the Perquimans River, near Hertford, N. C., and it carries an estimated price tag of $20 million.

Construction of a 1,050×850-foot parking apron, together with its 300-foot-long×100-foot-wide reinforced concrete river ramps, called for some interesting paving techniques. The job also required a bulkhead along the shore line and fuel-unloading dock facilities. Diamond Construction Co., Savannah, Ga., was the contractor on this $2,184,856 phase.

A $1,060,964 contract, awarded to Norfolk Dredging Co., Norfolk, Va., covered the removal of almost 3 million cubic yards of material from the Perquimans River. Using the dredge Talcott, which has a 21-inch intake

Strong, Dependable Forms for extra-high round concrete columns

New Interstate Rt. 94, South Milwaukee, Wisconsin. Contractor: Lincoln Construction Company. Architect: Wisconsin Highway Dept. Engineer: Consoer, Townsend & Associates

Form round concrete columns with

SONOCO Sonotube® FIBRE FORMS

and save time, labor and money.

These 27 ft. high, 3 ft. diameter overpass piers contain approximately a ton of concrete every two feet . . . all the way up! SONOTUBE Fibre Forms, used in this project, handled the tremendous weight at such heights perfectly, and permitted the 27 foot drop of the first pour without damage to the forms.

Used in bridges, overpasses, or buildings, SONOTUBE Fibre Forms are lightweight and easy to place, brace, pour, and strip . . . provide the fastest, most economical forming method for round columns of concrete.

And, left in place on the column for the curing period, SONOTUBE Fibre Forms provide a "wet cure" for concrete . . . eliminate the need for wet coverings or expensive curing treatments.

Choose from 3 types: Seamless (for finished columns); "A" Coated (for exposed columns); or "W" Coated (for unexposed columns). Order Sonoco SONOTUBE Fibre Forms in specified lengths or standard 18' shipping lengths . . . sizes from 2" to 48" I.D. Can be sawed.

See our catalog in Sweet's

For complete information and prices, write

- HARTSVILLE, S. C.
- LA PUENTE, CALIF.
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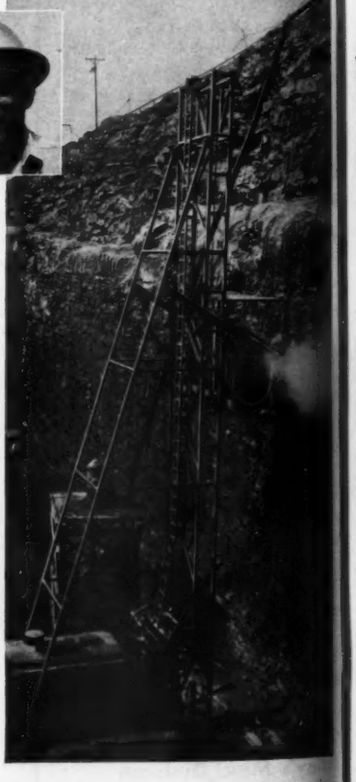
SONOCO Construction Products

4272 SONOCO PRODUCTS COMPANY

For more facts, use Request Card at page 18 and circle No. 314

R. T. KANGAS
Superintendent



THE MACHINE:

Drill rig mounted on elevator moving on 50-ft tower. Contractor: Selby Drilling Corporation.

THE OPERATION:

Drilling 30° angle anchor bolt holes along conduit walls at Niagara Power project.

THE BITS:

Brunner & Lay carbide Rok-Bits, *of course!*

Brunner & Lay CARBIDE ROK-BITS • DRILL RODS
INTRASET STEEL • COUPLINGS, ADAPTERS, STRIKING BARS & SECTIONAL STEEL
Standard or ROPE thread • MOIL POINTS • CLAY SPADES • ASPHALT CUTTERS, etc.

Write for NEW complete catalog #759 on your company letterhead, stating your position. Brunner & Lay, Inc., 9300 W. King St., Franklin Park, Ill. *77 progressive years.* Plants and conversion shops: Albuquerque, Asheville, Birmingham, Dallas, Denver, Dorchester (Boston), Franklin Park, Long Island City, Los Angeles, Philadelphia, Portland, Sacramento, Seattle, Yardley (Spokane), Lachine, Que., Vancouver, B. C.

For more facts, use Request Card at page 18 and circle No. 315

Concrete for the 1,050×850-foot parking apron was first delivered to the Rex spreader by Pumpcrete lines, but difficulties made the contractor turn to a more conventional method. Hot weather, heat of hydration, and hot Pumpcrete lines caused water loss that resulted in a stiff mix. Pavers were brought in to complete the work with the same mix design.

and an 18-inch-diameter discharge. Norfolk formed a turning basin and a channel for planes and boats from the sea runways to the parking-apron ramps. The area along the 3,000-foot-long bulkhead was also brought to a 14-foot minimum depth to conform with the turning-basin and channel depths.

Spoil areas used

Dredged material was pumped at rates between 10,000 and 15,000 cubic yards per day to four spoil areas. These areas, designated A, B, C, and D, were undesirable swampland.

Spoil areas A and B, located along the Perquimans River and on both sides of the parking apron, were built up to elevation plus 6 feet with sand. This fill was required to support future facilities. Area A required about 210,000 cubic yards, and area B required 168,000 cubic yards of dredged sand. About 5,900 linear feet of 8-foot dikes to retain the fill had to

(*Continued on next page*)

miller

FIVE IN ONE FIREBALL

Here's what makes this Miller model the "Five-in-One":
1. AC welder for metallic arc welding
2. DC welder for metallic arc welding
3. AC or DC welder for TIG welding
4. A 10 KW, 115/230v single phase 60 cycle power plant
5. 1 KW of DC while welding

The DAH-350-L Fireball, driven by Hercules 32 hp engine, is another Miller FIRST, offers both a-c and d-c for metallic arc or TIG welding with three separate a-c and d-c amperage ranges for each.

There's continuous high frequency for a-c TIG welding with choice of "start only" or constant high frequency for d-c TIG work.

Standard equipment includes built-in high frequency stabilizer, polarity switch, power supply for water coolant system, and automatic inert gas control panel with solenoid valve and post flow timer. Trailers are available for welder only or for welder with coolant system and gas cylinders.

SPECIFICATIONS

	Metallic Arc	Tungsten Arc
WELDING RANGE	35-100 Amps AC	35- 75 Amps AC
	65-160 Amps AC	65-160 Amps AC
	110-400 Amps AC	150-375 Amps AC
	35- 80 Amps DC	35-100 Amps DC
	75-175 Amps DC	85-225 Amps DC
	125-350 Amps DC	170-375 Amps DC
RATED OUTPUT	250 Amps Tungsten Arc, 100% Duty Cycle DC	
	300 Amps Tungsten Arc, 100% Duty Cycle AC	
CURRENT ADJUSTMENT STEPS	Infinite	
MAXIMUM O.C.V.	72 Volts DC	
	80 Volts AC	
1 KW DC AUXILIARY POWER	115 Volts	
AC GENERATOR OUTPUT	10 KW	
OUTPUT VOLTAGE	115/230 Volt, 1 Phase, 60 Cycle	

Complete specifications on these welders will be sent promptly upon request.

Other Miller welders in this series include:

DA-300-L BIG RIG
Four-in-One:
AC arc welder; DC arc welder; 10 KW AC power plant; 1 KW DC while welding

D-250-L ROUSTABOUT
Three-in-One:
DC arc welder; 10 KW AC power plant; 1 KW DC while welding

D-250-W ROUGHNECK
Two-in-One:
DC arc welder; 1 KW DC while welding

miller ELECTRIC MANUFACTURING COMPANY, INC., APPLETON, WISCONSIN

EXPORT OFFICE: 250 West 57th St., New York 19, N.Y. • Distributed in Canada by Canadian [illegible] Co. Ltd., Montreal

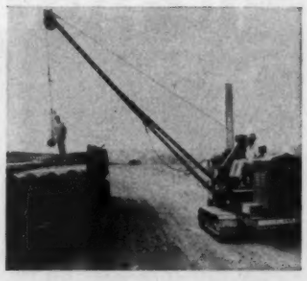
For more facts, use Request Card at page 18 and circle No. 316

Cleveland 80W lays pipe for 13-mile sewer line—does backfilling, too

G. C. McLeod Co. of Edmonton, Alberta made extensive use of its Cleveland 80W for laying 20" and 8" asbestos pipe on a 69,000-foot sanitary sewer line in Nanaimo, B. C. Even in the extremely wet and heavy mud of the salt water tidelands shown above, construction moved ahead 800—1,300 feet daily. As the line progressed into drier ground, the 80W was further employed in backfilling and cleanup operations.

THE ONE-MAN-OPERATED 80W

- DOES SIDEBOOM WORK OF ALL KINDS, unloads, strings, lays pipe, sets valves, hydrants, etc.
- BACKFILLS SPOIL clean and fast from *either* side of trench.
- TAMPS SPOIL simultaneously with pull-backfilling, or separately, as required.



Check with your distributor now—get the complete 80W story

The CLEVELAND TRENCHER Co.

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Good Everywhere

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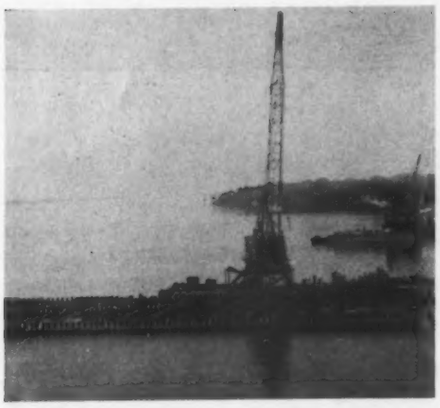
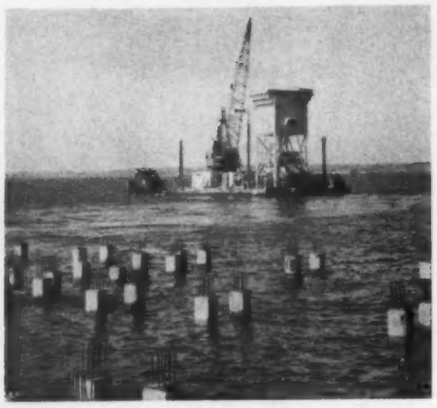


A barge-mounted revolving crane works on one of the two 300-foot-long ramps leading from the parking apron into the river. The 12-inch slab, which is being built in a cofferdam, reaches river bottom at its outboard end.



The floating Pumpcrete batch plant moves to a new work site at the base. In addition to using the Pumpcrete and conventional pavers for the apron slab, the contractor used the crane-and-bucket method for work on ramps.

Street construction is also being done under a separate contract. An Allis-Chalmers TS-160 motor scraper here excavates for a roadway at the base; an Allis-Chalmers HD-15 works as a pusher unit.

(Continued from preceding page)

be built for area A; about 4,100 linear feet of 8-foot dikes had to be built for area B. Lima and Lorain draglines handled this work.

Spoil area C, located about 5,000 feet south of the parking apron and adjacent to Albemarle Sound, required over 8,000 linear feet of 10-foot dikes to retain the 700,000 cubic yards of unsuitable hydraulic fill.

Spoil area D was man-made. A 3-sided 3,000×1,500-foot levee was built out into the sound and 10-foot-high dikes were built up by a 14-inch hydraulic dredge that excavated within the spoil area. This excavation was carried down to depths of 35 feet in order to obtain a 2,020,000-cubic-yard storage capacity.

The Talcott pumped the hydraulic fill from the river to spoil area C through a submerged and buried discharge pipeline. Once this area was built up to a plus 8-foot elevation, and after the spoil area D levee was completed, all the excess material being pumped was allowed to flow into area D.

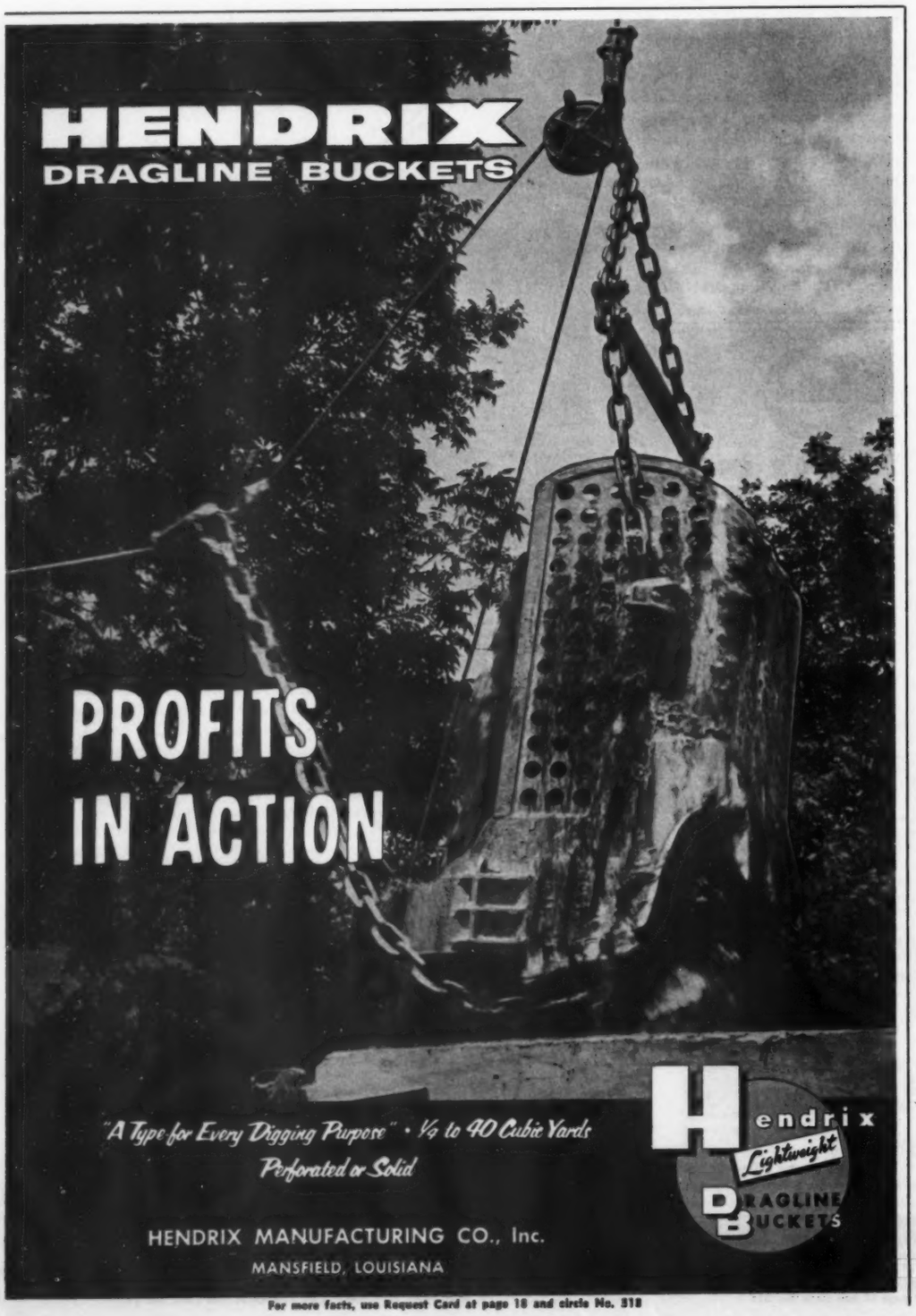
Two sluice gates were built into the dikes forming spoil area D to allow the water inside the area to escape.

Parking-apron paving

Diamond Construction used several methods of paving the 12-inch unreinforced-concrete parking apron. Since the contractor was equipped with a floating batch plant, a floating revolving crane and bucket were used to place concrete for the ramps. Transit-mix trucks were used to deliver concrete to the bulkhead wall cap. Both a Pumpcrete line from the floating plant and a paver supplied by batch trucks were used to place apron concrete.

The apron was paved in 25-foot widths running perpendicular to the shore line. By mooring the batch plant against the bulkhead wall, the contractor was able to pump through Pumpcrete lines and discharge in front of a Rex auger-type spreader. A transverse finisher and a floating machine completed the paving spread.

The difficulty with this method was the prevailing summer temperatures, heat of hydration, and hot Pump-



For more facts, use Request Card at page 18 and circle No. 318

crete lines; all of this contributed to the loss of water in the mix, and a stiff, dry concrete was deposited in front of the spreader. This prevented the contractor from maintaining the rigid specifications of the U. S. Navy Bureau of Yards and Docks, and much of the pavement placed in this way was rejected.

Diamond brought in a paving machine to complete the apron, and, without the concrete-mix design being changed, the pavers produced a mix that passed specifications.

Ramps and bulkhead

Diamond had to build two 100-foot-wide ramps that extended 300 feet into the river from the concrete bulkhead. Cofferdams, consisting of Z-type sheet piling and interbraced with 10-inch H-beams, were driven to permit the construction of the 12-inch-thick ramp slab. The outer edge of the ramp is 14 feet below the water surface, the elevation of the dredged river bottom.

This inclined slab is supported by pile bents on 15-foot centers. Bents consist of seven 20-inch-square concrete piles. These piles, 43, 48, and 51 feet in length, were driven to a 50-ton bearing by a McKiernan-Terry S-10 hammer.

The slab forms were supported in each direction by 8×12-inch timbers bolted to both sides of the concrete piles. The prefabricated 1×6-inch tongue-and-groove form sections, braced by 2×6-inch studs, were then placed over the 8×12's to allow reinforcing steel to be placed prior to concrete operations.

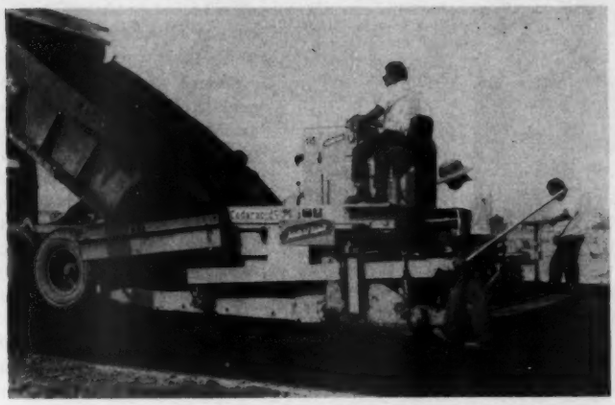
Malan Construction Corp., New York, N. Y., was the contractor for 8 miles of roads and streets and the installation of utilities, including sewers, electrical and water distribution systems, and disposal plants. Malan used an Allis-Chalmers TS-160 scraper, an A-C 45 grader, and HD-9 and HD-15 crawler tractors to complete the $1,980,000 contract.

Work on the base is expected to be completed sometime during 1961. The Martin P6M Seamaster is not yet in production, but three prototype models are being put through rigid Navy testing. Its cost is estimated at $9 million, and it is capable of flying at supersonic speeds. The Seamaster has been designed principally as a mine layer and photo-reconnaissance aircraft, but there are indications that the new plane has a far greater potential in offensive operations.

Personnel

Rear Adm. A. J. Fay (CEC), USN, 5th Naval District Public Works Officer, is the officer in charge of construction. Lt. Cmdr. D. F. Dalton (CEC), USN, is the resident officer in charge of construction. Ben F. Pierce is the project engineer; Ralph R. Hall, the chief inspector; and C. C. Wiggans, inspector.

E. L. Rose was superintendent for Diamond Construction; Robert C. Cahoon was the project engineer for Norfolk Dredging; and Fred Dyke was the superintendent for Malan Construction. THE END

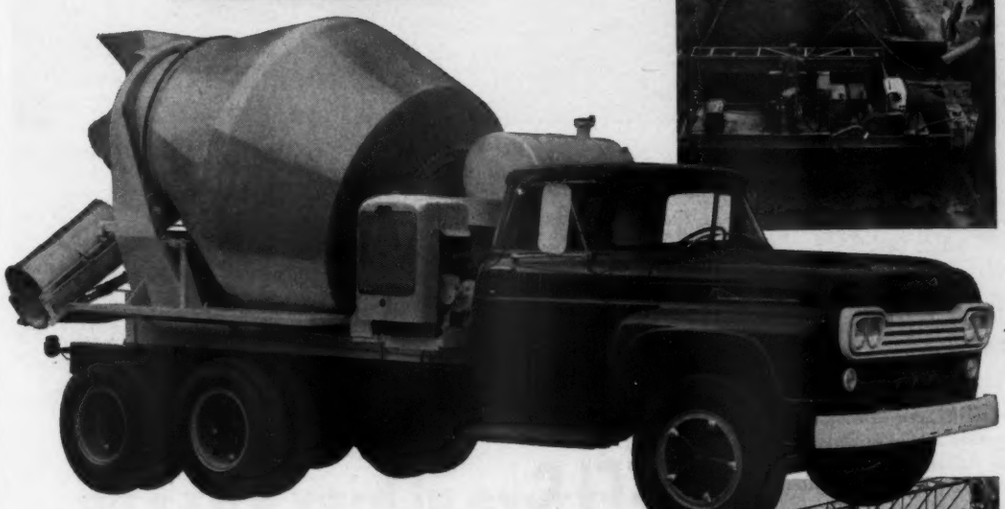


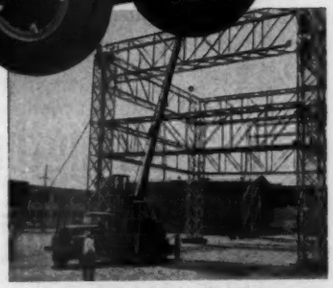
BLACKTOP WORK at the Navy's Pacific Missile Range on San Nicolas Island, Calif., is handled by a Cedarapids paver. The job included 10,000 feet of runway and taxiway; 1,000 feet of new runway; and an overlay on existing asphalt pavement of 8,000 feet. One half of the runway and taxiway were paved to completion while the Navy used the other half; then, construction was resumed on the unfinished half. The completed runway was sealed with emulsified asphalt and sand.

In the ready-mix and construction industries

THE SWING IS TO

Ford
INDUSTRIAL ENGINES





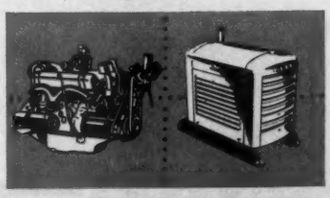
More and more construction projects are being powered with dependable Ford Industrial Engines every day. Here's why:

ADVANCED FEATURES—Ford's Short Stroke design reduces friction and wear. Deep-Block construction provides smooth engine performance. *And all Ford engines offer higher power-to-weight ratios than ever before possible!*

GREATER ECONOMY—Overhead valve construction throughout Ford's entire engine line permits higher engine compression ratios, provides better breathing for greater power output, and makes servicing easier, quicker and less costly.

PARTS AND SERVICE—Ford's world-wide dealer network (over 10,000 Ford Dealerships in the U.S. alone) offers prompt, efficient service *wherever you go.* For these and many other reasons, you'll find that Ford power is *right* for your construction equipment, too!

More power to you . . .



Visit the Ford Motor Company Display at the Sand and Gravel Show . . . Feb. 15 to 18 . . . at the Chicago Coliseum—Booths 16 and 17

INDUSTRIAL ENGINE DEPARTMENT, FORD DIVISION, FORD MOTOR CO., P.O. BOX 598, DEARBORN, MICH.

West of Rockies write to: FORD INDUSTRIAL ENGINE DEPT., P.O. BOX 6787, LOS ANGELES 22, CALIF. / FORD INDUSTRIAL ENGINE DEPT., P.O. BOX 1666, RICHMOND, CALIF.

For more facts, use Request Card at page 18 and circle No. 319

Manufacturers Memos

E. R. Evans, vice president in charge of sales of Vulcan Iron Works, Inc.

Vulcan Iron Works, Inc., Chicago, has elected **E. R. Evans** vice president in charge of sales. **W. N. Schjerven, Jr.**, has been elected chief engineer for the manufacture of pile-driving and extracting equipment.

Several appointments have been made in the sales and service organization of the **Euclid Division** of General Motors Corp., Cleveland. **Gerry E. Danby** is the new manager of the sales development department, succeeding **Alan S. McClimon**, who takes over the newly created post of manager of national accounts.

Louis A. Campbell has been named district sales representative in Montana and the Canadian provinces of Alberta and Saskatchewan. **Robert J. Schroeder** has been transferred to the southern sales region as district sales representative for Kentucky, West Virginia, and eastern Tennessee. **Charles T. Gallaher** and **Howard W. Middleton** are now sales representatives at Euclid's branch in Los Angeles.

The **Timken Roller Bearing Co.**, Canton, Ohio, has appointed **Ralph W. Updegraff** to the post of general factory manager of the Bearing and Rock Bit Divisions. **Robert L. Sisson** has been named general superintendent of the Canton and Gambrinus factories, succeeding Updegraff.

Graham Ross has been appointed manager of sales of the Plainfield, N. J., division of **Worthington Corp.**, Harrison, N. J. He will be responsible for the sales of all equipment manufactured at the division's plant.

W. T. Alder... vice president ... Ingersoll-Rand C...

Ingersoll-Rand Co., New York City, has elected **W. T. Alderson** vice president. He was previously manager ... the company's compressor engineering department.

A number of promotions have been made in the sales department of **Allis-Chalmers Mfg. Co.**, Milwaukee. **Robert C. Brown** is the new manager of sales in the Midwest region for the General Products Division, and **F. H. Woodruff** is manager of the Evansville district.

New manager of the Wichita district is **Carl E. Hellerich; Frank R. Hunter** holds the same post in the Minneapolis district. Hunter succeeds **M. J. Kroeger**, who has retired from the organization.

S. M. Osthagen takes over the post of manager of utility sales in the Boston district; and **C. P. Carlisle** is manager of industrial sales in the same district.

Logan T. Johnston has been elected president of **Armco Steel Corp.**, Middletown, Ohio. He succeeds **Ralph J. Gray**, who has been elected chairman of the board.

F. M. Thimmesh has been elected president of **Rosco Mfg. Co.**, Minneapolis. Former president **J. A. Miller, Sr.**, is now chairman of the board of directors.

George W. Fulford, new executive vice president, continues as sales manager; **J. D. Aldrich** was named vice president. **R. S. Rosholt** is the new treasurer, and **John A. Miller, Jr.**, is secretary of the company.

The Transmission & Axle Division, **Rockwell-Standard Corp.**, Detroit, has appointed **Kenneth M. Koch** director of engineering and **Gerard J. Flannery** as service parts manager.

Koch will direct all engineering activities at the division's six plants. Flannery will be in charge of the service parts department and will work closely with customers and the division's plants.

LeTourneau-Westinghouse Co., Peoria, Ill., has appointed **Robert S. Marshall** district representative for L-W products in upstate New York and the Province of Quebec. He will have headquarters in Syracuse, N. Y.

A. G. Lindquist has been elected financial vice president and secretary of **Gardner-Denver Co.**, Quincy, Ill. He was previously vice president and treasurer. **Robert H. Meystre** is the newly elected treasurer, and **William Miller** is the controller. **Kenneth J. McDaniel**, who has been secretary, has been named president of Gardner-Denver do Brazil, S. A. He will have headquarters in Rio de Janeiro.

LACLEDE REINFORCING STEELS strengthen new Illinois interstate system

This section of the new East St. Louis Expressway will soon become a part of the Interstate and Defense Highway U. S. Route 70 and 44. Approximately 1100 tons of Laclede reinforcing bars were furnished for this project, which spans the major main-line railroad tracks connecting St. Louis and the East.

Put the complete line of Laclede reinforcing steels and services to work on your next job.

CONTRACTORS
H. H. Hall Construction Company, East Saint Louis, Illinois
Fruin-Colnon Contracting Company, Saint Louis, Missouri

LACLEDE

LACLEDE STEEL COMPANY

SAINT LOUIS, MISSOURI ◆ Producers of Steel for Industry and Construction

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Esso Standard Oil Co. has elected **O. V. Tracy** president and **Robert H. Scholl** executive vice president. Tracy succeeds **William Naden**, and Scholl replaces **E. Duer Reeves**. Tracy's responsibilities on the Esso board of directors have included all of the company's refining and petrochemicals operations. Scholl has, since 1949, served as general counsel.

Alex A. Diffey has been appointed assistant general manager of marketing. He succeeds **George W. Butler**, who has been named deputy coordinator of world-wide marketing activities for **Standard Oil Co. of New Jersey**, which is Esso's parent company.

Soiltest, Inc., Chicago, has appointed **John R. Davies** manager in Europe. He will head the company's operations in Europe, the Middle East, and Africa from headquarters in Lausanne, Switzerland. The company will also have a sales office in Brussels, Belgium, and a distribution center and stocking warehouse in Breda, The Netherlands.

James J. Steur is now Eastern sales manager. He has been the marketing director since 1958 and continues in that post. Steur will have headquarters in the New York City office.

Two sales appointments have been made by **Hercules Motors Corp.**, Canton, Ohio. **John E. Scales** has been named district sales manager for the Pacific Southwest area; and **Robert S. Miller** has been appointed manager of oil-field sales. Scales' territory includes Arizona, California, Colorado, Nevada, New Mexico, and Utah.

William M. Phillips has been promoted to the post of manager of the Southern district of **The Eimco Corp.**, Salt Lake City. He will be in charge of sales of the Birmingham and Houston offices, and will be primarily concerned with the marketing of products of the company's Filter and Process Engineers Divisions. Phillips continues to have headquarters in Birmingham.

Dorace Dodd has been appointed assistant manager of the Tractor Division, Southern district. He, too, continues to work out of Birmingham.

Paul L. Gillan has been named special assistant to the vice president of engineering of **Mack Trucks, Inc.**, Plainfield, N. J. He will have headquarters in the Allentown, Pa., plant.

The new manager of the engineering materials laboratory of the research department is **Hal Shidemantle**. He will supervise activities of the metallurgical and chemical sections.

Carl J. Gustafsson has been appointed engineering manager of the Gear Design Department in Plainfield. He will handle all new and advanced-design geared components.

Trailmobile, Inc., Cincinnati, has appointed **N. G. Stedron** assistant vice president of sales in the company's general offices.

William H. Walker is now manager of the Denver branch. He was formerly manager of the Springfield, Mo., branch.

For more facts, circle No. 321→

Four new sales representatives have been appointed by **Brunner & Lay, Inc.**, Franklin Park, Ill. **H. P. Andrews** is assigned to Louisiana, Mississippi, and eastern Texas; **J. F. Fitzpatrick** to Iowa, North and South Dakota, Minnesota, Nebraska, and Wisconsin; **B. E. Hartman** to Arkansas and Oklahom; and **Lloyd Martin** to west Texas and New Mexico.

Highway Trailer Co., Edgerton, Wis., has elected **Robert A. Hitch** vice president of engineering, research, and development. He will headquarter at Hazleton, Pa., where the company is constructing an addition to its plant to accommodate research and development activities.

Charles F. Ramsdell has been appointed Eastern regional sales manager of the Utility Division of the organization.

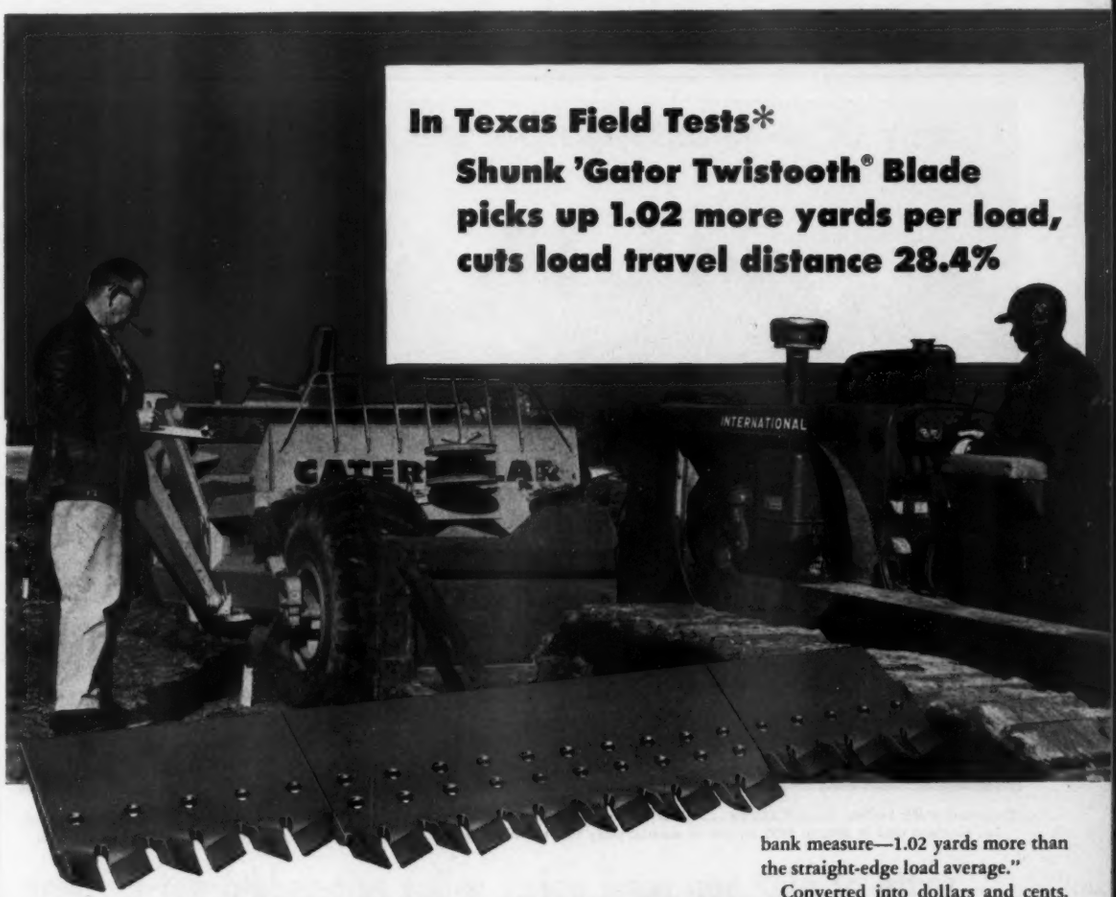
Truman J. Baldwin has been appointed southeastern zone representative of **Jackson Products, Air Reduction Sales Co.**, Warren, Mich., producers of arc-welding accessories and industrial safety equipment. From headquarters in Birmingham, Baldwin will cover Alabama, North and South Carolina, Florida, Georgia, and Tennessee.

Charles Milnar, chief service engineer of the Customer Service Division of American Hoist & Derrick Co.

American Hoist & Derrick Co., St. Paul, has appointed **Charles Milnar** to the newly created post of chief service engineer of the Customer Service Division. He will also be responsible for liaison and communication between the customer service and engineering departments.

In Texas Field Tests*

Shunk 'Gator Twistooth® Blade picks up 1.02 more yards per load, cuts load travel distance 28.4%



an extra yard in every load!

SHUNK 'GATOR TWISTOOTH BLADES *greatly increase earthmoving efficiency*—a fact proved conclusively in recent impartial tests at Texas A & M's Heavy Equipment Operators School.

Two identical borrow pits—composed of hard clay and sandy clay with high loading resistance—were staked out for the test. Two tests of 40 cycles each were completed with an International TD-20 Tractor push-loading a Cat DW15 Scraper. In the first test a standard-edge scraper blade was used; in the second, the standard-edge was replaced by a Shunk Twistooth Blade. To determine the volume of earth excavated, pits were cross-sectioned before and after each test.

Here are highlights of the test results: "Load travel distance averaged 161 feet with the Twistooth Blade and 225 feet with the straight-edge. Furthermore, the Twistooth picked up an average load of 9.02 cu. yds. by bank measure—1.02 yards more than the straight-edge load average."

Converted into dollars and cents, these figures represent an important profit potential. For example, let's take a scraper on a job averaging about 90 complete cycles in a ten-hour day. With dirt-moving costs between 40 and 50 cents a yard, this means that the Shunk Twistooth Blade, by adding an extra yard to every load, could earn $36 to $45 *more net profit* every day from every scraper on the job!

*Conducted at The Heavy Equipment Operators School, Engineering Extension Service, Texas A & M College, under the Direction of R. L. Peurifoy, noted engineer-author of *Construction Planning, Equipment and Methods* and other technical books and articles. Tests are not to be construed as endorsements of manufacturers' products by Texas A & M College.

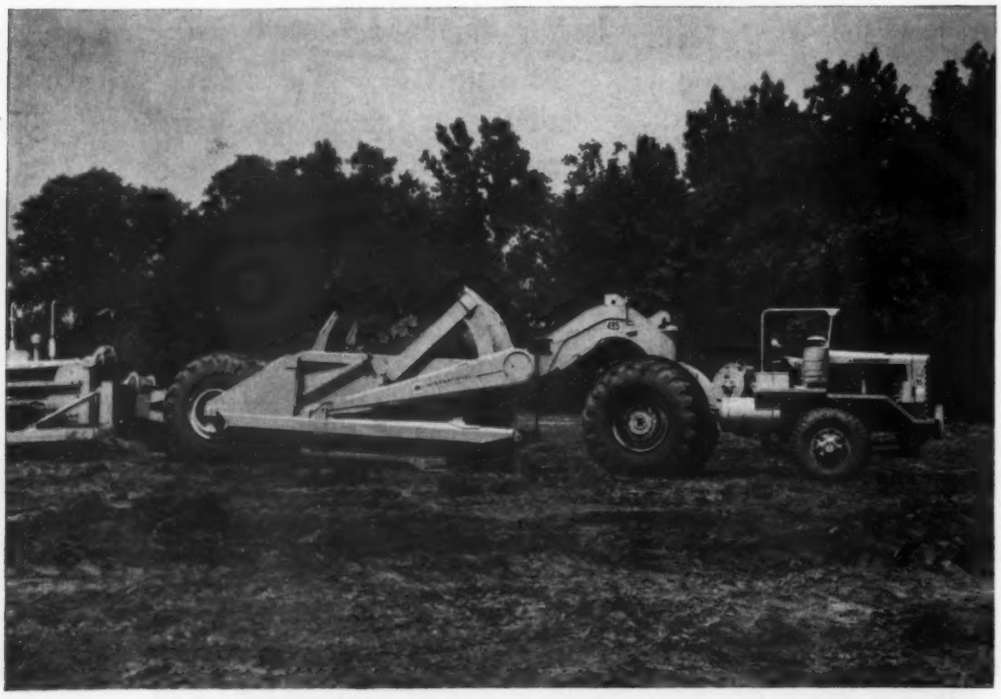
SUMMARY OF TEST RESULTS

	Standard Edge	Twistooth Blade
Average load by bank measure	8.00 cu. yds.	9.02 cu. yds.
Average load travel distance	225 ft.	161 ft.
Average feet of loading per cu. yd.	28.1 ft.	17.9 ft.

SHUNK MANUFACTURING COMPANY · BUCYRUS, OHIO

BEST BLADES MADE Shunk

A 2,500-POUND HEADACHE BALL is used by a Bucyrus-Erie 11-B transit crane to break up the concrete base of a water tank in Jackson, Miss. The rig was also used to demolish other concrete structures on a 69-acre site to make way for a commercial development.



Geared with Fuller ROADRANGER ... Three International Model 495 Payscrapers belonging to V. H. & M. Construction Co., Denham Springs, La., handle a total of 4500 to 5000 cu. yds. of material every 10½ hrs. in construction of Interstate Highway I-10 between Jennings and Egan, La.

Faster work cycles boost profits... COUNTERSHAFT BRAKE SPEEDS UPSHIFTS

Longer gear and bearing life with Pressure Filtration and Lubrication

Heavy rainfall and deeply-rutted, wet blue-clay surface have been major obstacles to the work of V. H. & M. Construction Company on a Louisiana highway project. Fighting weather, time and terrain, V. H. & M. handles a total of 4500 to 5000 cu. yds. every 10½ hours with 3 International Model 495 Payscrapers equipped with semi-automatic 9-speed Fuller R-1160 ROADRANGER Transmissions. Standard equipment on the R-1160 includes the Fuller Air-Powered Countershaft Brake and Pressure Lubrication and Oil Filtration System.

E. D. Pinkston, Superintendent, says, "Thanks to our Fuller-equipped Payscrapers, our production is very good despite miserable operating conditions and material which is extremely tough to handle. Our operators like the Fuller countershaft brake. It gives quick, easy upshifts without double clutching, keeps speeds up and cuts cycle time. And the pressure lubrication and filtration system prolongs gear and bearing life."

Ask your dealer about the off-highway Fuller Transmission . . . with countershaft brake and pressure filtration system as standard equipment . . . designed to put more profit in *your* operation.

FULLER TRANSMISSION DIVISION MANUFACTURING COMPANY KALAMAZOO, MICHIGAN

Subsidiary EATON Manufacturing Company

Unit Drop Forge Div., Milwaukee 1, Wis. • Shuler Axle Co., Louisville, Ky. (Subsidiary) • Sales & Service, All Products, West. Dist. Branch, Oakland 6, Cal. and Southwest Dist. Offices, Tulsa 3, Okla. Automotive Products Company, Ltd., Brock House, Langham Street, London W.1, England, European Representative

For more facts, use Request Card at page 18 and circle No. 322

Nature and properties of engineering materials

■ "Nature and Properties of Engineering Materials," by Zbigniew D. Jastrzebski, aims to provide the reader with the basic knowledge necessary for the selection and use of materials for specific engineering applications and to prepare him to solve future materials problems.

The book covers the structure of matter; colloids and organic high polymers; basic concepts of phase transformations; mechanical properties; metals; ceramic and related materials; electrical and magnetic properties; thermal properties; corrosion; friction, wear, and lubrication; cementing materials and concrete; and protective materials. Lists of problems are included in the text.

Priced at $11, the book may be purchased from John Wiley & Sons, Inc., 440 Fourth Ave., New York 16, N. Y.

ACI book of standards

■ The 382-page "ACI Standards—1959" contains the current standards, recommended practices, and specifications of the American Concrete Institute. Subjects covered include the design of concrete pavements; winter concreting; hot-weather concreting; selecting proportions for concrete and structural lightweight concrete; measuring, mixing, and placing concrete; and methods for applying portland-cement paint to concrete surfaces.

Data is also given on the minimum standard requirements for precast-concrete floor and roof units; test procedure to determine relative bond value of reinforcing bars; and building-code requirements for reinforced concrete.

The $5 book is available from the ACI, P. O. Box 4754, Redford Station, Detroit 19, Mich.

Report on the design of nonrigid pavements

■ Special Report 46 put out by the Highway Research Board is "A Cooperative Study of Structural Design of Nonrigid Pavements," a review of test procedures and presentation of rigid plate bearing test data.

Topics detailed are a study of load-bearing surfaces; a method of measuring simultaneous deflections; descriptions of test facilities and procedures; and a presentation of load-test data. Two appendixes cover test data of pavement component materials and asphaltic concrete and a special study of temperature and moisture conditions.

Priced at $1.20, the bulletin may be purchased from the HRB, 2101 Constitution Ave., Washington 25, D. C.

Universal Atlas news

■ Lloyd L. Schwarz has been promoted to sales manager of the St. Louis territory of Universal Atlas Cement Division, U. S. Steel Corp., New York City. He succeeds W. Troy Gaunt, who retired.

For further information on any of the products described in the following section, circle the designated number on the Request Card at page 18.

Scraper manufacturer announces new tandem line with capacities up to 56 yards

Tandem scrapers are available behind all three sizes of LeTourneau-Westinghouse 2-wheel Tournapull prime movers, as well as the recently introduced 4-wheel Speedpull. Total capacities with the tandems range from 18 cubic yards in the D size to 56 cubic yards in the Model B.

According to the manufacturer, coupling or uncoupling the second scraper can easily be accomplished in 30 minutes or less.

Electric controls for the rear scraper, just like the ones on the front, transmit the power for tail gate, apron, and bowl lift through electric cable, thus eliminating long reeves of wire cable between the two units. Maneuverability is increased by dispensing with the front axle and wheels of the second scraper. The units are designed to permit the second scraper to turn a full 90 degrees in relation to the front scraper.

A Model D Tournapull with tandem scrapers totaling 18 yards capacity can make a 180-degree turn in less than the 32-foot 7-inch space required by the C with single 18-yard scraper.

For further information write to the LeTourneau-Westinghouse Co., Dept. C&E, 2301 NE. Adams St., Peoria, Ill., or use the Request Card at page 18. Circle No. 89.

Seat and controls on new 35-ton rubber-tire roller swing from one side to other

The Shovel Supply Co. announces the Ferguson Model 3507 35-ton rubber-tire self-propelled roller.

Empty, the roller weighs 21,700 pounds; when fully ballasted, 70,000 pounds. It is provided with a GM 125-hp diesel engine, Allison transmission and torque converter, and Clark heavy-duty rear end.

Equipped with seven 13:00×24 wide-tread 90-pound tires, the machine gives a full 8 feet of coverage. Tires for 120-pound pressure can be furnished, if desired. Wheel loads vary from 3,100 pounds to 10,000 pounds per wheel, depending on ballast. All wheels oscillate.

Instruments, control levers, and seat are mounted on an arm revolving on a central column, allowing seat and controls to swing from one side of the roller to the other, thus affording complete control and full vision from any position.

The rig is instantly reversible. Speeds of 2, 4, and 8 mph are provided, with instant gear change while in motion. Powerful air brakes are actuated by a foot pedal.

For further information write to the Shovel Supply Co., Dept. C&E, Box 1369, Dallas 21, Texas, or use the Request Card at page 18. Circle No. 74.

With the Kolman radial stacker, segregation is minimized by a cable-suspension design that permits raising and lowering while stockpiling in order to keep the head pulley near the top of the pile at all times.

Radial stackers offered in lengths to 150 feet

A complete range of pneumatic-tire radial stackers is announced by the Kolman Mfg. Co. The stackers are available in sizes from 90 to 150 feet and in 18 through 36-inch widths.

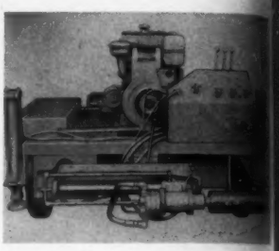
A cable-suspension design permits raising and lowering the stacker while stockpiling so as to keep the head pulley near the top of the pile at all times. Thus, material falls only a short distance, minimizing segregation. In addition, electric or mechanical power lift and power travel are available, giving the operator fingertip control over the exact location of the stacker discharge point.

Dual pneumatic tires eliminate the need for an elaborate ramp or steel-rail installation. A swivel-wheel feature permits the wheels to be moved from the radial arc position to a parallel position.

For further information write to the Kolman Mfg. Co., Dept. C&E, 4922 W. 12th St., Sioux Falls, S. Dak., or use the Request Card at page 18. Circle No. 40.

Pavement coring machine is hydraulic-powered

The new mobile Mark V pavement coring machine is designed for production-type test coring on highways, aircraft runways, and other slab-type masonry structures.



Because of its lightweight, one-piece design, the machine reportedly may be mounted on or demounted from any ¼-ton truck or trailer in minutes. Two-point hydraulic suspension reduces setup time to seconds. The hydraulic drill motor accommodates diamond bits from 2 to 10 inches in diameter.

The self-powered, self-contained Mark V has 3-way hydraulic drive that permits coring through steel-reinforced concrete at the rate of 30 seconds per inch, according to the manufacturer. Hydro-Cushion control automatically maintains the correct drilling pressure and rate of feed, and automatically compensates for minor changes in material hardness.

For further information write to Mobile Drilling, Inc., Dept. C&E, 900 N. Pennsylvania St., Indianapolis 4, Ind., or use the Request Card at page 18. Circle No. 69.

←For more facts, circle No. 323

leading contractors use Ramset

Just a pull of the trigger and versatile Ramset tools set threaded studs, drive pins and other types of fasteners into concrete or steel without pre-drilling or plugging. Beside speed, versatility and one-hand operation, you can choose from industry's widest selection of fasteners and powder charges. Discover for yourself why Ramset is today's most widely used powder-actuated fastening system. Write direct or call your Ramset dealer, listed under "Tools" in the Yellow Pages.

WHERE SPEED IS VITAL

INSIST ON THE RED TIP AND THE TOP

Ramset® Fastening System

OLIN MATHIESON CHEMICAL CORP. • WINCHESTER-WESTERN DIV. • 283-B WINCHESTER AVE. • NEW HAVEN 4, CONN.

SAFETY + COMFORT

New headgear on Jackson fiber glass and aluminum safety hats and caps sets a fixed 1¼-inch safety margin between top of head and hat shell, yet permits ample adjustment for good fit and comfort.

Cradle, Headband and four *T-Straps*, all of polyethylene, form a smooth, shock absorbing, easy to clean assembly. While the cradle, fastened directly to the hat shell, provides the fixed safety margin, the connecting T-straps enable the headband to be easily raised, lowered and even tilted by pushbuttons and tabs.

It is equally simple to adjust the headband with its attached, all-around sweatband to clearly marked hat sizes 6¾ through 7½".

Add to the safety of your present Jackson hats and caps (fiber glass and aluminum) by installing this new, all-plastic headgear, part 88. Simply pull up on the metal hangers that are riveted to the shell, slip on the slotted cradle straps, then push hangers down. Once installed, the all-plastic headgear will prove very durable. However . . .

if only the new soft-lined leatherette sweatband needs replacing, you only need part 84, above.

To replace part 84, pull it loose from the T-straps by hand and fasten the new part by snapping the studs of the T-straps into the desired holes. No tools needed.

Jackson fiber glass and aluminum safety hats and caps pass all known government and industry requirements *however adjusted.*

Jackson Products

31739 Mound Road, Warren, Michigan

Sold Everywhere by Better Welding Supply and Safety Products Distributors

For more facts, use Request Card at page 18 and circle No. 324

Trailer-mounted heater, asphalt storage tank

A new trailer-mounted combination asphalt storage tank and heater is available from the Childers Mfg. Co., Inc.

Mounted on a heavy-duty gooseneck trailer, the unit is ready for immediate operation upon being charged with circulating fluid and connected to power source. An electric generating plant can be installed on the trailer next to the heater if power is not available at the job site.

Standard equipment on the trailer includes ten stud dual wheels, 10-ply tires, fifth wheel and plate or pin, and built-in tank for heater fuel. There is space at the rear to accommodate an asphalt pump, and up front, next to the heater, there is room for the installation of an electric generating plant if one is desired.

All storage tanks on Childers H-Model combinations are insulated with 2-inch Fiberglas and covered with a 16-gage metal skin. The interior of these tanks is equipped with a heating arrangement that assures a temperature rise as rapid as 60 degrees per hour from a cold start.

No direct firing is employed in the storage tank, thus eliminating the danger of overheating the asphalt at any point. All parts of the heater and tank are easily accessible for adjustment or repair.

For further information write to Childers Mfg. Co., Inc., Dept. C&E, P. O. Box 6185, Albuquerque, N. Mex., or use the Request Card at page 18. Circle No. 20.

This Childers Model H-1013 10,000-gallon asphalt storage tank with circulating hot-oil heater is mounted on a 45-foot heavy-duty trailer. The unit is completely plumbed and ready for the operation when moved onto a job.

Electronic batch controls for any make of batcher

Johnson electronic controls give accurate, automatic control of batching operations. Signal lights show the progress of the batching.

Electronic batch controls that can be used either as new plant equipment or as conversion units to modernize any make of batch equipment are now available from the C. S. Johnson Co., a division of the Koehring Co.

Simplified control permits dial selection of one of a number of preset formulas and selection of batch quantity. Signal lights keep the operator informed at all times of the progress of the batching, without his having to look at the plant.

Johnson custom-builds combinations of batching controls to fit individual plant requirements, including remote controls for material-handling facilities or other plant operations. Equipment can be installed so that discharge of the completed batch can be controlled by the operator at the central control console or by the truck driver at the batcher discharge gates.

For further information write to the C. S. Johnson Co., Dept. C&E, P. O. Box 71, Champaign, Ill., or use the Request Card at page 18. Circle No. 85.

2 jobs DONE BETTER, more profitably
. . . because of these DEPENDABLE HOBART WELDERS

A "MAINLINER" FITS INTO ADVANCED CONSTRUCTION TECHNIQUES like a duck takes to water. Extra built-in features—at no extra cost—are the reason. Progressive contractors and practical welders like these features most: honest 250 amp. capacity • hot, fast, stable arc • 500 precise welding heat settings • made-to-last construction.

EMERGENCY AC POWER • INSTANT DC WELDING on the job repairs avoid costly delays—labor loss. The 200 amp. "Power/Weld" has a 100% duty cycle • supplies 1 KW AC power while you weld • 5 KW 110/220 v. AC for full time operation of lights, tools, motors, pumps, etc. • Low cost • A "must" for fast moving projects.

HOBART BROTHERS CO., Box 820, Troy, Ohio, Phone FE 2-1223

New COLOR FILM on how to select the right electrode for every job Available on request

HOBART BROTHERS CO., Box 820, Troy, Ohio
Yes, I'd like to know more about these Hobart welders:
☐ 250 amp. "Mainliner" ☐ 200 amp. "Power/Weld"
☐ Other type welders
Name
Address
City Zone State

For more facts, use coupon or Request Card at page 18 and circle No. 325

Again Coffing Brings You a New Line of Hoists

For the second time in less than a year Coffing has introduced a new hoist line to give you easy, safe, positive efficient lifting power at moderate cost.

The new RA Series Safety Pull Aluminum Ratchet and Pawl Lever Hoist is easy to operate—requires minimum handle pull—only 59 pounds for the ¾-ton model to 97 pounds for the 6-ton model. It may be operated from either side and the design prevents freezing a load. Load rotation is easy because of ball thrust bearings in the load hook assembly.

Safety has been built into the hoist. It will not ratchet under load if handle is released nor will it free chain. Controls are protected from inadvertant shifting. The bottom stop eliminates any hazard from the handle being released unintentionally and prevents handle from being moved to a position parallel to the load chain which would develop undesirable twisting action. The exclusive safety handle bends to indicated overload.

Strength without excess weight in the new hoist is achieved by a special aluminum alloy which is used in the body and handle. Long service life has been provided by the high tensile material in the chain retaining guide, heat treated load sheave and the plated, high tensile, heat treated alloy steel link chain. Maintenance is held to a minimum by the rugged construction and simplicity of design.

The new Coffing RA Series Safety Pull Aluminum Ratchet and Pawl Lever Hoist is available in six models with capacities from ¾ to 6 tons. Ask your distributor or write for Bulletin ADH-86.

COFFING HOISTS
DUFF-NORTON COMPANY
810 Walter Street • Danville, Illinois

COFFING HOISTS
Ratchet Lever • Air
Hand Chain • Electric

DUFF-NORTON JACKS
Ratchet • Screw
Hydraulic • Worm Gear

For more facts, use Request Card at page 18 and circle No. 326

Ability to load scrapers, wagons, and trucks with sides reaching 15½ feet above the ground is a feature of the new Jeb-Loader. The unit mounts on a motor grader, with the conveyor supported by the rubber-tire tandem.

High-capacity belt loader for loading large trucks

A high-capacity belt loader designed to fill large trucks, wagons, scrapers, and other carriers is announced by Jebco, Inc.

Designated Jeb-Loader, the unit features a 30-foot conveyor that reaches 15½ feet high at the discharge end. According to the manufacturer, it can cast up to 1,750 yards per hour and load up to 800 yards per hour. A 32-inch-diameter cutting disk feeds material to a trough-shaped belt that travels at 614 fpm. The belt is kept free of clinging dirt by scrapers bolted to the conveyor frame.

A stabilizing tandem with rubber-tire wheels that oscillate with the ground contour carries most of the conveyor weight. When traveling to a new working area, the conveyor is disconnected and trailed behind the motor grader on the tandem wheels.

The Jeb-Loader is designed to team with the larger motor graders of the LeTourneau-Westinghouse and Caterpillar lines. It reportedly can be operated by any competent motor-grader operator.

For further information write to Jebco, Inc., Dept. C&E, P. O. Box 362, Blair, Nebr., or use the Request Card at page 18. Circle No. 58.

Convertible space heater operates on natural gas

A space heater that operates on natural gas at regular line pressure is offered by the Aeroil Products Co., Inc.

According to the manufacturer, the unit produces from 200,000 to 240,000 Btu. All controls, except the thermostat, are self-contained. Blow-outs and blow-backs, which might happen under certain conditions, only result in the automatic controls immediately shutting off the unit.

This space heater is available with a conversion kit that permits the unit to be adjusted to run on high-pressure LP gas in minutes.

For further information write to Aeroil Products Co., Inc., Dept. C&E, 69 Wesley St., South Hackensack, N. J., or use the Request Card at page 18. Circle No. 80.

Motor-in-head vibrator operates on ac or dc

A new electric motor-in-head concrete vibrator is announced by the Power Tools Dept. of Remington Arms Co., Inc.

Known as Model EV 26, the tool operates on either ac or dc current, at a rate of 10,000 vibrations per minute. It is designed with a tougher, more flexible hose; is offered with 25 feet of electrical cord; and is available in lengths of 7, 14, and 21 feet.

The thermal overload switch protects the motor when either ac or current is being used, and it itself automatically.

This tool has a head diameter less than 3 inches to permit work tight spots.

For further information write the Remington Arms Co., Inc., C&E, Administrative Bldg., mere Road, Stratford, Conn., or the Request Card at page 18. No. 49.

28 "EUCS"

BUILDING 11 MILLION YD. EARTH-FILL DAM

30 YD. BOTTOM-DUMPS ON LONG, HIGH SPEED GRAVEL HAUL... REAR DUMPS HANDLE BIG ROCK LOADS

Hills Creek Dam in western Oregon is part of the Willamette Valley Project under construction by the Corps of Engineers to provide flood control, navigation, power and irrigation. The embankment will require 11 million yards of earth and gravel fill and is scheduled for completion in 1961... it will be 2,400 feet in length and will have a maximum width of 1,600 feet at the base and 24 feet at the crest.

Green-Tecon, a joint venture of Green Construction Co., Des Moines, Iowa, and the Tecon Corporation of Dallas, Texas, have the earthmoving contract. These contractors are using a fleet of 28 Euclids on this big job . . . 13 Bottom-Dumps of 30 yd. and 7 of 17 yd. struck capacities and 8 Rear-Dumps of 22 and 27-ton capacities. The big "Eucs" work two ten-hour shifts six days a week... have marked up an excellent record of productive capacity and job availability.

Whether your operations involve big earthmoving projects like this one or small grading, stripping and industrial work, there's a Euclid model to match your requirements. Get all the facts and figures on the modern Euclid line of crawler tractors, scrapers, rear-dump and bottom-dump haulers from your Euclid dealer.

Six 27-ton and two 22-ton Rear-Dump "Eucs" haul rock from the quarry to the fill... all of these units are equipped with Torqmatic Drives and Torqmatic Brakes.

EUCLID Division of General Motors
Cleveland 17, Ohio

EUCLID (GREAT BRITAIN) LTD.
Lanarkshire, Scotland

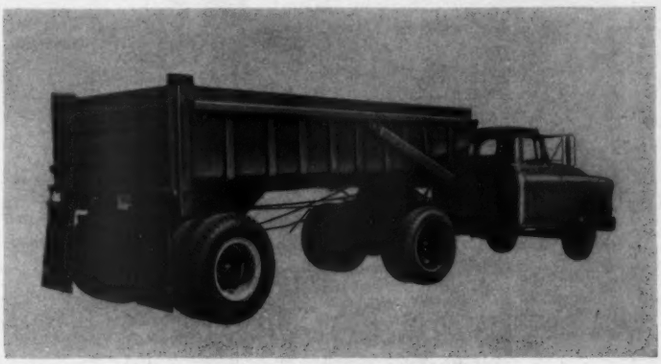
Announce new method of prestressing concrete

A new method of prestressing concrete is announced by the Radistres Co.

Where prestressing formerly has been done with tendons stretched in one direction, in radial prestressing, elongated encircling steel bands bind the casting under great compressive forces in all directions. This system makes possible the casting of large, very thin wall panels of light weight and high strength.

The elongation of the tendons is accomplished by a tensioning frame that holds a spider-web pattern of concentric wires under tension until the concrete has cured to sufficient strength; the tension in the wires is then transferred to the concrete, releasing the frame which is lifted from the casting.

For further information write to the Radistres Co., Dept. C&E, 1924 Temple Drive, Tallahassee, Fla., or use the Request Card at page 18. Circle No. 37.



Lift arms outside the body make it possible to increase the dump angle with a resultant decrease in line pull required to unload the trailer.

Announce new features on cable-dump trailer

A 25 per cent increase in dumping speed and a 22 per cent reduction in line pull are features of the new Fruehauf-Schonrock single-axle cable dump.

The tapered front portion of the body has the advantage of pushing the load from the trailer at small dumping angles.

The unit is more than 1,000 pounds lighter in weight, due to the elimination of a heavy center frame through the use of pressed-steel wrap-around girdles.

The automatic tail gate is horizontally braced for added strength and is hinged at the top to permit higher stockpiling.

For further information write to the Fruehauf Trailer Co., Dept. C&E, 10942 Harper Ave., Detroit 32, Mich., or use the Request Card at page 18. Circle No. 17.

Two-way mobile radio is fully transistorized

The Bendix Radio Division of the Bendix Aviation Corp. announces a new transistorized 2-way mobile radio.

Designated 2V Series, it uses transistors and printed circuits extensively. The power supply is completely transistorized, and there are only 2 tubes in the receiver.

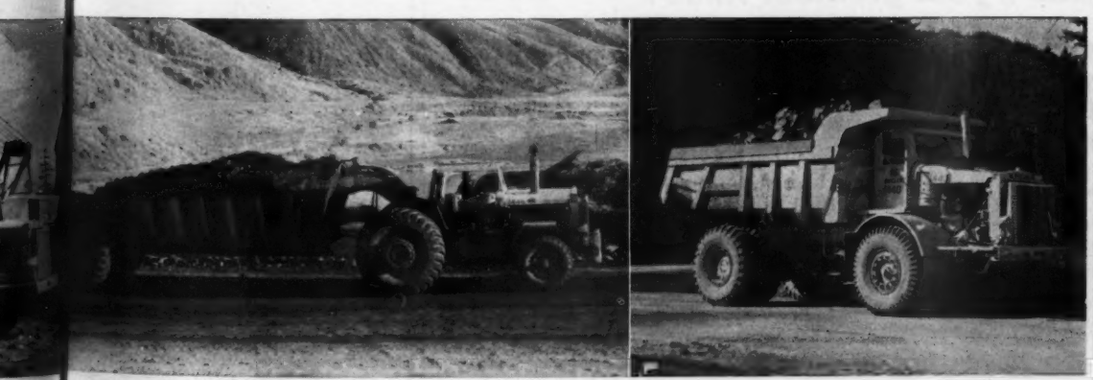
The company points out that because the 2V and all subsequent Bendix 2-way radio units will use the same type of connector, fleet operators will not have to modify installations for each new type of communication.

The 2V Series is said to be rugged, reliable, and exceptionally easy to service.

For further information write to the Bendix Radio Division, Bendix Aviation Corp., Dept. C&E, Joppa Road, Towson, Md., or use the Request Card at page 18. Circle No. 70.

←For more facts circle No. 327

A 7½ yd. dragline loads a Model LDT Bottom-Dump Euclid with 40 yds. of river gravel for 2½ mile haul to the fill. Green-Tecon have 13 of these big "Eucs" that are powered by 12 cylinder GM diesel engines of 432 h.p. with Torqmatic Drive.



Big loads of heavy gravel move over good haul roads at fast travel speed in these Bottom-Dump "Eucs". Torqmatic Drive — torque converter and semi-automatic transmission — provides full-power shift and a smooth flow of power to meet all road and grade conditions on the 5 mile cycle.

Well-maintained haul roads enable the Rear-Dumps to utilize their fast travel speeds on the 4500 ft. rock haul. On downgrades that are a maximum of 15% Torqmatic Brakes provide positive control of speed.

GM GENERAL MOTORS EUCLID

EUCLID EQUIPMENT

FOR MOVING EARTH, ROCK, COAL AND ORE

Constructed for light and medium loading operations on road maintenance jobs, the GraderloadeR features a 1-cubic-yard capacity.

Shovel-loader attachment for line of graders

The GraderloadeR, a new 1-cubic-yard shovel-loader attachment for Caterpillar motor graders, is announced by the Martin Co. Designed for operator convenience, it mounts on the front of the grader, allowing full-vision operation during loading or dumping.

Once the mountings are added to a grader, the GraderloadeR can be easily installed or removed in minutes, states the manufacturer.

The unit is said to be especially suitable for fast loading of excess windrow material on road maintenance jobs. Other applications include material handling, backfilling, snow removal, and general stockpiling. With a reach height of 11 feet, the unit easily clears truck sides and dumps in bed center.

The machine's 2-lever hydraulic control valve is installed at the side of the grader control panel, providing one-hand operation of the entire attachment.

For further information write to the Martin Co., Dept. C&E, 620 Andrews Ave., Kewanee, Ill., or use the card at page 18. Circle No. 53.

Safety device protects against conveyor damage

Roto-Guard, the positive-motion-indicator safety mechanism for conveyors, is offered by The Bin-Dicator Co.

The unit is designed to convert rotary motion into an electrical signal. This signal impulse may be used to energize an alarm system or to operate control switches automatically.

According to the manufacturer, any failure in the mechanism results in actuation of the safety controls to which it is electrically connected. It is available in general-purpose and explosionproof models.

For further information write to The Bin-Dicator Co., Dept. C&E, 13946 Kercheval Ave., Detroit 15, Mich., or use the Request Card at page 18. Circle No. 63.

Swiveling headache ball available for cranes

A 600-pound swiveling headache ball for whip lines on crane booms 200 feet and over is announced by Miller Swivel Products, Inc.

Designated Model HB16, the 10-

ton-capacity unit is said to provide safe overhaul with maximum efficiency.

The Model HB16 is available in the standard four types for easy rigging: clevis, eye, wedge, and thimble.

For further information write to Miller Swivel Products, Inc., Dept. C&E, P. O. Box 938, Pomona, Calif., or use the Request Card at page 18. Circle No. 60.

It's what's inside RCA's Transistorized "LD" Radio that makes it your greatest value!

Take a look inside the new RCA 2-Way Radio and you'll see an array of advanced improvements that give you new economy, dependability and performance.

Sensibly designed with you in mind, the "LD"* employs standard transistors only in circuits where long experience proves their reliability . . . where they can do the best job of cutting down on costly battery drain. You get maximum profit-earning "on air" time, too, because circuits are "Road Map" coded for fast, sure servicing guidance.

You'll like the extra measure of dependability you get with Security Sealed Circuits assuring top performance under the most rugged operating conditions. And you'll cheer the "LD's" booming voice—thanks to a powerful five watts of audio.

Priced considerably lower than other transistorized 2-way radio equipment—comparable in cost to conventional tube-type radios—the "LD" is your greatest value.

So if it's economy, dependability and performance you want in 2-way radio—if you are looking for a way to improve the efficiency of your operation—get the whole *RCA* story, right away.

Your RCA Representative will be glad to explain further why RCA "LD"
**(Low Drain) equipment is today's best buy in 2-Way Radio. Or for complete descriptive literature — write RCA, Dept. D-277, Bldg. 15-1, Camden, N. J.*

RCA

RADIO CORPORATION of AMERICA

Trade(s) ®

COMMUNICATIONS DIVISION • CAMDEN, N. J.

For more facts, use Request Card at page 18 and circle No. 328

The Stump Gobbler, which operates on a tractor power takeoff and has a 6-way hydraulic control, removes stumps quickly and easily.

Stump remover utilizes tractor power takeoff

A new type of stump-removal equipment is available from the Myers-Sherman Co.

Called Stump Gobbler, the unit hooks up quickly to a tractor, operates on a power takeoff, and features 6-way hydraulic control.

The set of 16 teeth, which bite off as much as 2 inches of a stump at every pass, is easily removed for sharpening or replacement. A complete change requires only 10 to 15 minutes. Teeth are available in either carbon or carbide steel as required.

For further information write to the Myers-Sherman Co., Dept. C&E, Streator, Ill., or use the Request Card that is found at page 18. Circle No. 71.

Dolly for pulling two-wheel units

The Athey Products Corp. has available a new rubber-tire front running gear designed to allow crawler tractors, in foul or sloppy footing, to tow rubber-tire trailed units normally used behind rubber-tire prime movers.

The gear (or dolly) forms a connecting link between the crawler tractor and the trailed unit. It is made in three sizes to mount to all Athey trailers and Caterpillar scrapers for the DW21, DW20, and No. 619 tractors.

The dolly is composed of a drawbar, axle member, and one of three hitch members. The hitch member is matched in design to the desired scraper or trailer. Cable sheaving to match crawler tractors and cable control units is available, as is an air-brake system if brakes are necessary for the trailed unit. The dolly utilizes the hydraulic-pump packages presently furnished with the new Athey trailers; pumps for older equipment are also available.

For further information write to the Athey Products Corp., Dept. C&E, 5631 W. 65th St., Chicago 38, Ill., or use the Request Card at page 18. Circle No. 23.

TOPS IN TARPS

Contact Fulton now!

Fulton efficiency means immediate delivery of all standard sizes and weights, and fast, quality production to meet *all your custom requirements.* Over 90 years experience assures you of quality-controlled production—from raw cotton to finished tarps and curing mats.

All Fultex and Shuredry tarps have all-around 1½ inch hem . . . grommets anchored in four layers of duck . . . triple-stitched seams! Fulton processing insures all-weather resistance . . . prolonged wear . . . complete protection. Your company name stenciled free! Phone or write Fulton now. Buy direct from the mill for substantial savings.

Also Nylon Tarps, Cotton and Burlap concrete curing mats

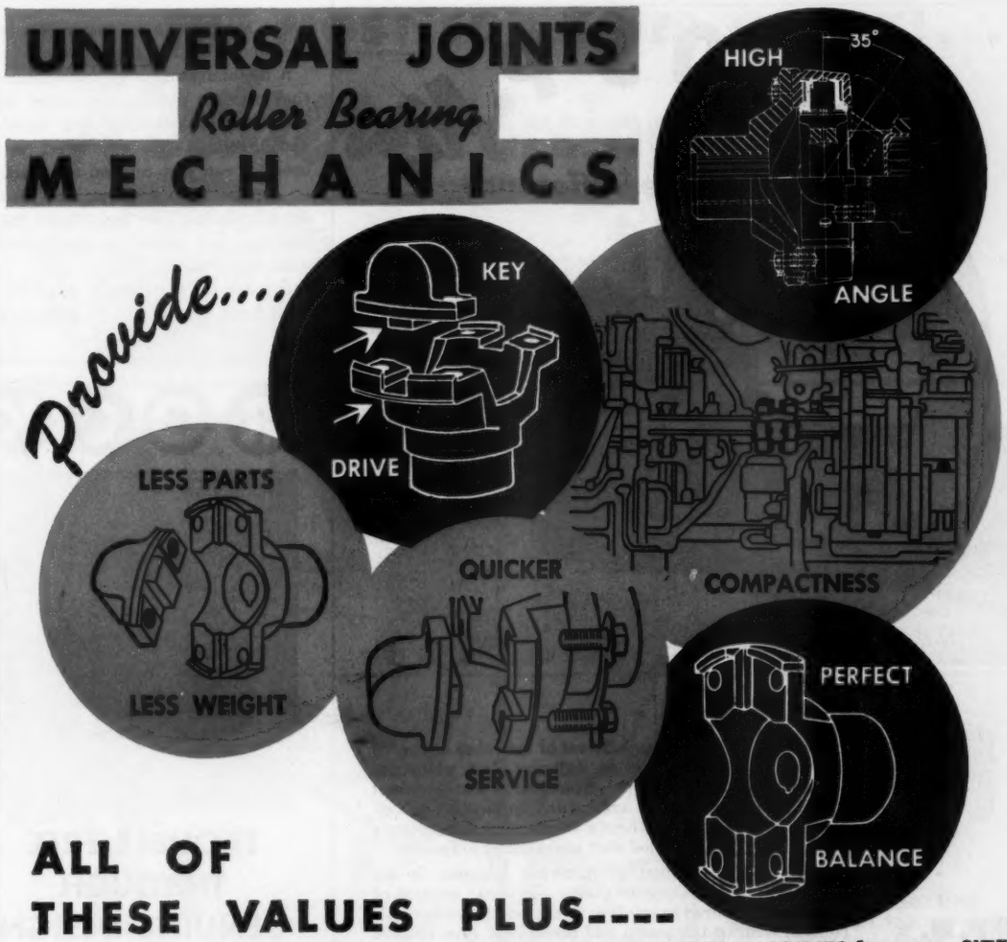
Fulton
COTTON MILLS

P. O. Box 1726, Atlanta 1, Ga. / MUrray 8-1111 / TWX: AT 24

For more facts, use Request Card at page 18 and circle No. 329

UNIVERSAL JOINTS
Roller Bearing
MECHANICS

Provide....



ALL OF THESE VALUES

MECHANICS UNIVERSAL JOINT DIVISION
Borg-Warner • 2030 Harrison Ave., Rockford, Ill.
Export Sales: Borg-Warner International
36 So. Wabash, Chicago 3, Illinois

PLUS----
Roller Bearing UNIVERSAL JOINTS for every SIZE and TYPE of machine, and ALL kinds of engine driven equipment.

PLUS----
Whatever your universal problem is; MECHANICS JOINTS provide definite, practical solutions.

PLUS----
From the largest to the smallest application, MECHANICS Roller Bearing UNIVERSAL JOINTS provide the maximum torque capacity.

PLUS----
Send us a print or description of your particular joint needs—for MECHANICS engineers' recommendations to overcome your drive line difficulties.

Specify MECHANICS *Roller Bearing* UNIVERSAL JOINTS
BW
For Cars, Trucks, Tractors, Farm Implements, Road Machinery, Industrial Equipment, Aircraft

For more facts, use Request Card at page 18 and circle No. 330

DON'T THROW AWAY CRACKED DIESEL CYLINDER HEADS

You can save 50% of replacement cost with Factory Rebuilt Swick-Guth Heads. Swick-Guth restores cracked or worn heads, blocks, transmission cases to a Guaranteed good as new condition by the Controlled Heat Process . . . successfully used for more than a Quarter Century.

Send today for price list and a free booklet on the famous Swick-Guth Process, and the name of the dealer nearest you

SWICK-GUTH CO.
McPHERSON, KANSAS • FORMERLY GUTH CO.

"SPECIALISTS IN WELDING DIESEL CASTINGS"

For more facts, use Request Card at page 18 and circle No. 331

ROSCO'S P.M.* makes the difference

Applying bitumen through 2 feet of spraybar as shown may not appear unusual or different, but when the operator can use any length—from 1 to 24 feet—*without changing the pressure* and *without any application adjustment whatever* . . . then there's a difference. It's *Rosco's Pressure Metering Method* that makes that difference.

The P. M. method of applying bitumen is *not* metered by the bituminous pump, nor is the amount of discharge measured in relation to the pump revolutions. Normal wear of the pump and occasional, unavoidable nozzle clogging never affect the application rate. Here again, Pressure Metering *makes the difference* . . . the rate is automatically maintained by Rosco's P. M. system.

***P. M. = Pressure Metering**

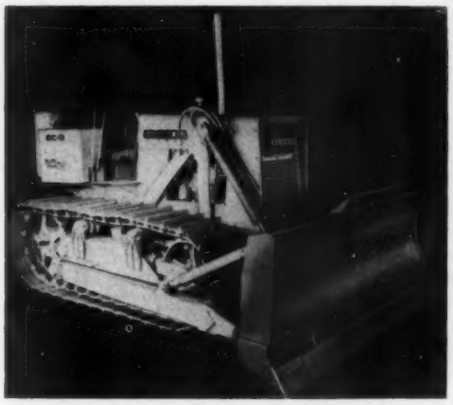
It is this Pressure Metering Master Valve, the "heart" of Rosco Distributors, that gives you this built-in control of pressure which is the only accurate method of obtaining precise bituminous application. This is the valve that also directs the flow of material for all of the Rosco Distributor functions.

Make the difference pay off. Let your Rosco dealer show you how. Write the factory for descriptive bulletins with specifications of Distributors with P. M.

3118 Snelling Avenue, Minneapolis 6, Minnesota

For more facts, use Request Card at page 18 and circle No. 332

Product Parade



Powered by a 4-cylinder diesel engine, the OC-9 has a maximum drawbar pull of 16,900 pounds.

Medium-size tractor rated at 62 horsepower

The Model OC-9 crawler tractor is announced by The Oliver Corp.

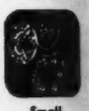
A major feature is a transmission that provides independent power to each track, controlling both speed and direction. With little effort, the operator can spot-turn on one track or execute a counter-rotation turn for the shortest turn possible. Or the operator can make gradual turns within any radius.

Powered by a 4-cylinder valve-in-head diesel engine, the OC-9 is rated to deliver 62 gross engine horsepower, 57 net flywheel horsepower. The bare tractor weighs 9,975 pounds. Maximum drawbar pull is 16,900 pounds.

The OC-9's length of track on ground is almost 6 feet, which affords a full 1,714 square inches of ground-contact area.

For further information write to The Oliver Corp., Dept. C&E, 400 W. Madison St., Chicago 6, Ill., or use card at page 18. Circle No. 79.

ROCKFORD


Small Spring Loaded

Heavy Duty Spring Loaded

Oil or Dry Multiple Disc

Heavy Duty Over Center

Power Take-Offs

Automotive Spring Loaded

TROUBLE FREE THROUGH GENUINE DESIGN

Trouble Free usage and Genuine Design can be obtained for your products when the designing engineer specifies a ROCKFORD CLUTCH. A vast backlog of knowledge and experience is available to him at anytime. The American industry has learned that ROCKFORD CLUTCHES mean extra values. The strength and toughness—the completeness of a Genuine Design—the wide range of sizes—the excellent machining—the long range economies received—all these advantages, and more, of ROCKFORD CLUTCHES combine to create an unexcelled reputation for versatility. Let our engineering staff help you to determine the type and size clutch best suited to help improve the power transmission control in your next model.

SEND FOR THIS HANDY BULLETIN
Gives dimensions, capacity tables and complete specifications. Suggests typical applications.

ROCKFORD Clutch Division BORG-WARNER
314 Catherine St., Rockford, Ill., U.S.A.
Export Sales Borg-Warner International — 35 So. Wabash, Chicago 3, Ill.

CLUTCHES

For more facts, use Request Card at page 18 and circle No. 333

This Volvo Model L 375 90-hp diesel truck is one of three models being introduced in this country by the Swedish company.

Announce new truck line of Swedish-built diesels

A new line of Swedish-built medium and heavy-duty diesel trucks ranging from 90 to 185 brake horsepower, and with gcw ratings of 40,000 to 68,000 pounds, is announced by Volvo Import, Inc.

All are driven by 6-cylinder 4-cycle direct-injection Volvo diesel engines featuring overhead valves and 17:1 compression ratios. Standard equipment includes Ross steering systems, 5-speed synchronized transmissions, and Eaton 2-speed rear axles.

The largest model, the L 495, is made especially for mixer and dump bodies. Two engines, developing either 150 or 180 horsepower, are available.

In every model, the engine is easily accessible. Fuel injectors, reached by merely raising the alligator hood, can be changed in 15 minutes. For more detailed work, the engine-compartment sides and the fenders can be taken off by removing a few screws.

A special feature on Volvo trucks is the "exhaust" brake—a device for closing off or partially closing the exhaust system; this builds up back pressure in the engine, which increases the compression, slowing the engine enough to act as an efficient downhill holdback. The exhaust brake is actuated by a simple lever mounted on the dashboard near the driver.

These diesel engines are said to develop maximum torque or load-moving power at moderate revolutions per minute. This, according to Volvo, cuts maintenance costs by insuring a potential of between 100,000 and 200,000 miles of continuous operation without major overhaul.

For further information write to Volvo Distributing, Inc., Truck Division, Dept. C&E, 357 Wilson Ave., Newark, N. J., or use the Request Card at page 18. Circle No. 50.

To obtain further information on any of the products described in this section, circle the number, that is given at the end of the item, on the handy Request Card at page 18.

New air-powered hoist has many applications

An air-powered hoist designed for a variety of applications is announced by the Joy Mfg. Co.

Designated Model JCP-120, the hoist has a lifting capacity ranging from 27,000 pounds at 37 fpm to 3,700 pounds at 220 fpm. A 5-cylinder radial air motor (10, 17, or 23-hp) with integral gear case drives the large rope drum through a multiple roller chain. The drum has a capacity of 2,300 feet of ¾-inch wire rope.

For portability, the entire assembly is mounted on a skid-type base. According to Joy, this one-piece welded steel base keeps all parts in permanent alignment.

All controls for the hoist—throttle, brake, and clutch—are mounted on the hoist in the standard model but can be removed and operated from a remote position.

The JCP-120 can also be equipped with electric motor drive of 10 to 25 horsepower, or an air-cooled gasoline or diesel-engine drive.

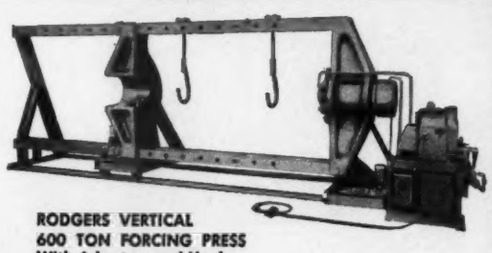
Over-all dimensions in inches with air motor drive are: length, 77 inches; width, 48 inches; height, 53 inches.

For further information write to the Joy Mfg. Co., Dept. C&E, 333 Henry W. Oliver Bldg., Pittsburgh 22, Pa., or use the Request Card at page 18. Circle No. 22.

THE MOST FOR YOUR MONEY!...

Rodgers Forcing Presses

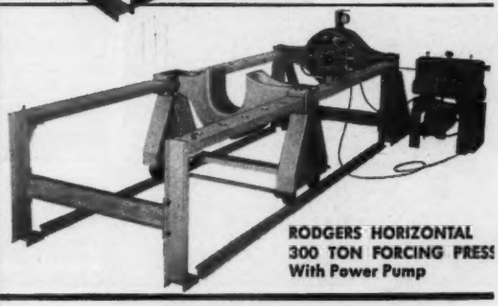
Greater Versatility — Rugged Power — Flexible Controls



RODGERS VERTICAL
600 TON FORCING PRESS
With Adaptors and Hooks

RODGERS INCLINED
400 TON FORCING PRESS
With Power Pump

RODGERS PORTABLE
100 TON FORCING PRESS
With Hand Pump



RODGERS HORIZONTAL
300 TON FORCING PRESS
With Power Pump

When you buy a Rodgers Forcing Press, you are not tying up your money in a single purpose tool. Compared with other presses, Rodgers design permits a wider variety of jobs to be handled—from the full tonnage capacity of the press, on heavy duty work, to partial capacities required for light jobs.

Rodgers Press design also offers unique flexibility in the interchangeability of cylinders and power source. Each press can be easily modified to suit changing job requirements. And an "extra" feature is the simple way the cylinder and pump may be detached for jacking, pulling and pressing work in the shop or field. Rodgers positive, accurate controls may be used at the press or remote.

When you check Rodgers Forcing Presses, feature for feature, their rugged construction, fast, positive action, and the variety of adaptors, hooks and other accessories available, you will be convinced that a Rodgers will give you the *most* for your money.

Rodgers Forcing Presses are available in standard, horizontal, vertical, inclined and portable models... capacities from 100 to 600 tons... with power or hand pumps.

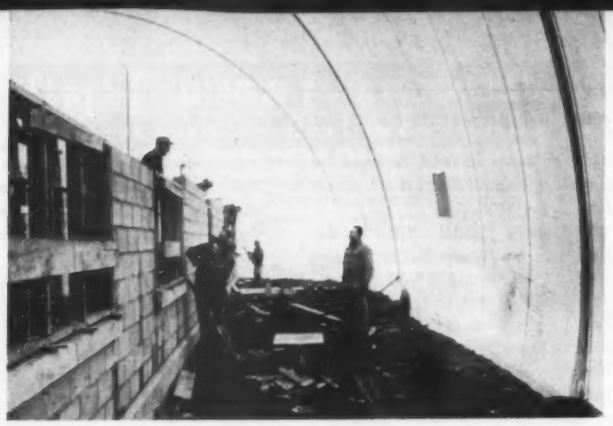
Write for Catalog No. 315A... it gives complete details and specifications.

RODGERS HYDRAULIC, Inc.

Pioneers In High Pressure Hydraulics Since 1932

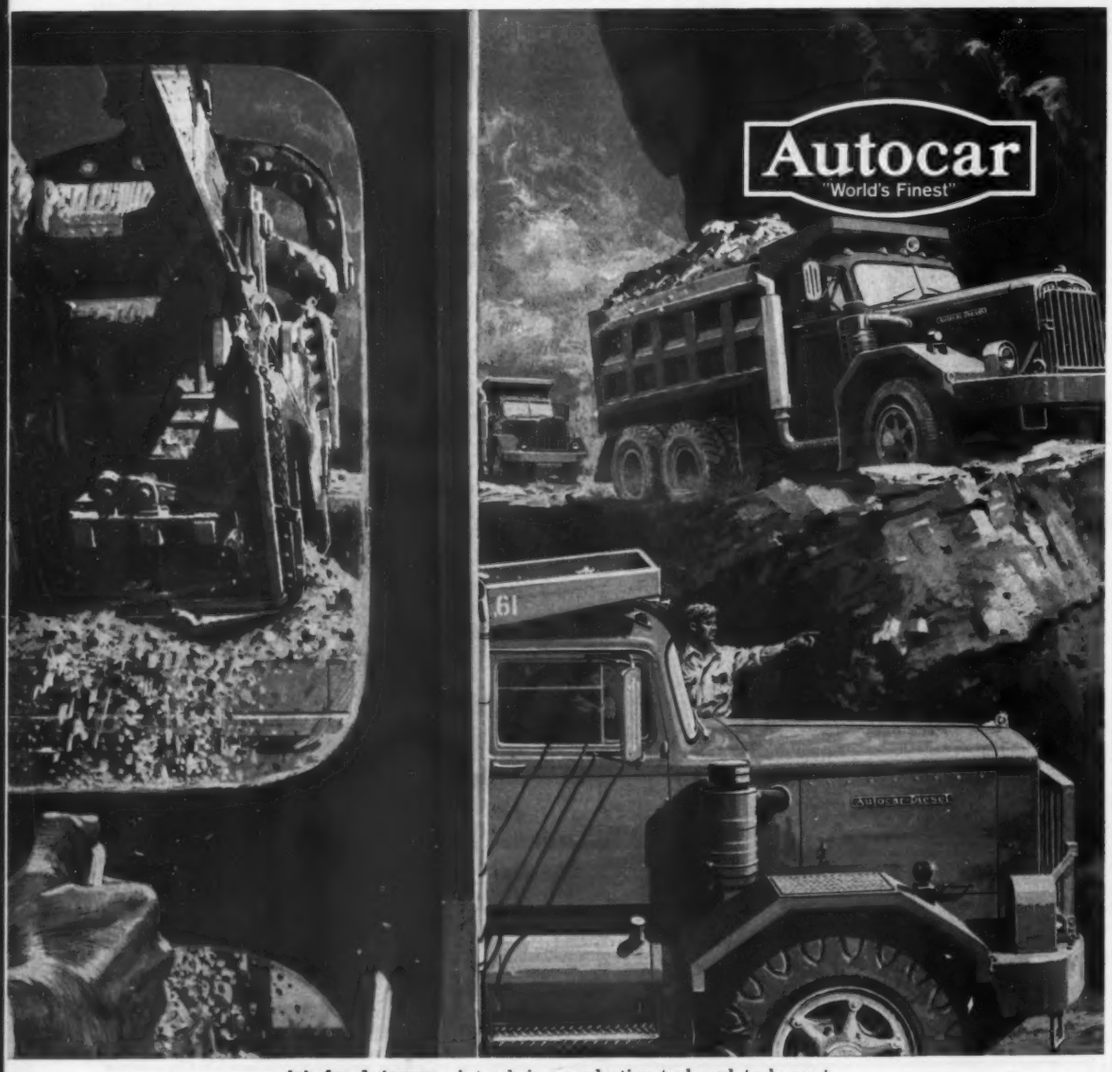
7415 Walker Street • Minneapolis 16, Minnesota

For more facts, use Request Card at page 18 and circle No. 334



Product Parade

This airhouse permitted a contract to be completed on schedule for Leslie-Miller, Inc., of Fort Worth, Texas. The contractor was building refueling houses at Larsen Air Force Base, Moses Lake, Washington. The job called for laying up concrete-block structures in sub-freezing weather. Without warmth and weather protection for the job, the contract reportedly would have stalled. This 60×110×30-foot-high airhouse, manufactured by the Seattle Tent & Awning Co., was kept at ideal drying temperatures by heating the air that was blown in by two 2,000-cfm Electro-Watt blowers. As each block-house was completed the airhouse was deflated, moved, and set up for construction of another. For further information on airhouses, write to the **Seattle Tent & Awning Co.**, Dept. C&E, 310 Westlake North, Seattle 9, Wash., or use the Request Card at page 18. Circle No. 76.



Job for Autocars—A truck is a production tool, and tools must match the job—like the Autocar ten-wheelers shown at work here.

Peak production calls for Autocar ..."nothing less"

It doesn't pay to mince words. When your shovel piles on a yard more every time—when the floor is rough, rocky or difficult—when you can't afford a slowdown in the hauling cycle—*you need an Autocar.*

And *only* Autocar *fully* custom-engineers each truck to fit the job... your assurance of top performance.

Autocar's great load capacity, power and stamina are the result of the way Autocars are built—with unequaled precision and quality.

Where the jobs are tough and schedules tight, Autocars are an absolute necessity. If you settle for less, you'll *get* less—so why try to get by without the "World's Finest"?

Autocar service is prompt and comprehensive at all White-Autocar outlets . . . in every major city.

Autocar
"World's Finest"

Division of
The White Motor Company
Exton, Pa.

Multipurpose scraper has adjustable teeth

Production of a multipurpose scraper with adjustable scarifying teeth is announced by the Independent Mfg. Co.

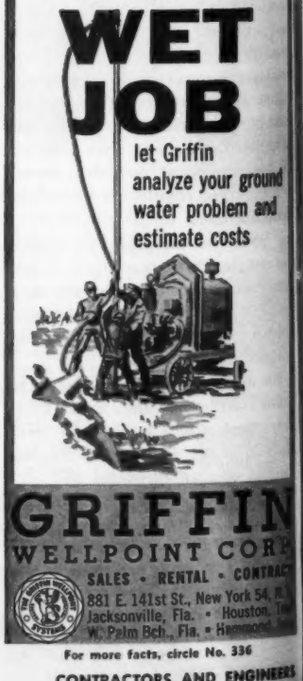
The Landscraper attaches to any 3-point-hitch tractor, and will scarify, grade, level, scrape, and backfill. It comes 5½ and 6 feet wide.

Special features of the Landscraper include the multiple-use scarifying teeth. Three settings enable the operator to adjust teeth for scarifying, scarifying and grading, or grading.

Rigidly mounted cutting and backfill blades are reversible, providing four cutting edges. Curvature of the Landscraper and blades allows earth to roll for proper suction when making a cut. Straight sides of the Landscraper permit grading close to buildings and walls.

For further information write to the Independent Mfg. Co., Dept. C&E, Box 208, Neodesha, Kans., or use the Request Card at page 18. Circle No. 90.

←For more facts, circle No. 335



For more facts, circle No. 336

Expand transistorized two-way radio line

Motorola is expanding its line of Motrac 2-way radios. It will accommodate either positive or negative vehicular battery ground polarity, and will have models for operation from either 6 or 12-volt sources.

The new line is to consist of 25 and 50-watt models for the low-band (25 to 54-mc) frequencies, and 30, 60, and 80-watt models for the high-band (144 to 174-mc) frequencies.

According to the manufacturer, low operating costs and optimum reliability are accomplished through use of transistors in all receiver and power-supply circuits and in two transmitter circuits.

The new units measure 3 inches high, 13 wide, and 17 long.

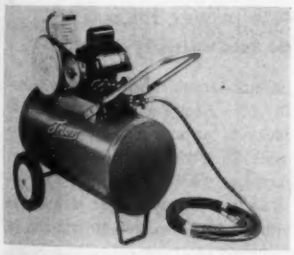
For further information write to Motorola Inc., Communications and Industrial Electronics Division, Dept. C&E, 4501 W. Augusta Blvd., Chicago 51, Ill., or use the Request Card at page 18. Circle No. 59.

Portable air compressor is rated at 150 psi

A portable air compressor is announced by the SpeedWay Division of Thor Power Tool Co.

Designed to provide up to 150 psi, the unit is recommended for such jobs as the powering of air tools and attachments, operation of paint sprayers, and cleaning of equipment.

The Thor SpeedCompressor Model 600 is equipped with 12-gallon-capacity air tank, automatic air-control switch, and automatic relief valve to assure safe operation of the equipment. The compressor has heavy-duty 20-foot air hose with air chuck, and it is powered by a ½-hp shock-resistant motor with an 8-foot heavy-duty cord for operation from electric outlets or from portable generating equipment.



The machine is 26 inches long, 16¼ inches wide, and 27 inches high. It weighs 91 pounds.

For further information write to the SpeedWay Division, Thor Power Tool Co., Dept. C&E, 1421 Barnsdale Road, LaGrange Park, Ill., or use the card at page 18. Circle No. 67.

A substantial increase in productivity through use of a Dotmar curb-and-gutter paving machine is reported by the M. G. Monte Contracting Co., of Mt. Clemens, Mich. On the Edsel Ford Expressway in the Detroit area, the firm achieved a production of 2,000 linear feet of roll curb and gutter in a 9-hour working day—said to be 35 to 40 per cent better than obtained by former manual methods. The same crew was employed with the machine. For further information write to **Dotmar Industries, Inc.**, Dept. C&E, 519 Hanselman Bldg., Kalamazoo, Mich., or use the Request Card at page 18. Circle No. 3.

B-501

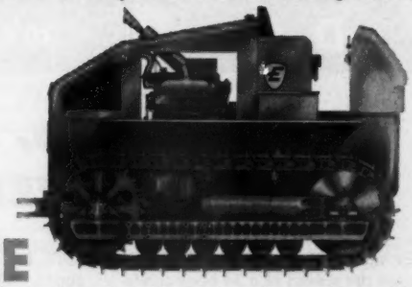
WHAT'S THE DIFFERENCE IN TRACTORS ?

YOU'LL BE SURPRISED!

Send for comparative Fact Sheet, showing vital statistics of the great

EIMCO 103

tractor series as compared with other leading makes.



WHAT A DIFFERENCE

Eimco advanced engineering and quality craftsmanship makes!

Write to The Eimco Corporation, P.O. Box 300, Salt Lake City 10, Utah for Fact Sheet and Specifications on these new 100 HP Crawler-Tractors, engineered and built as only Eimco can build them . . . to fit your jobs, and needs.

Eimco 103 Tractor and Dozers
Eimco 123 Front End Loader
Eimco 133 Steel Mill Front End Loader
Eimco 143 Log Loader

"ADVANCED ENGINEERING AND QUALITY CRAFTSMANSHIP SINCE 1884"

THE EIMCO CORPORATION

TRACTOR LOADER DIVISION
634 SOUTH 4TH WEST
SALT LAKE CITY, UTAH — U.S.A.

EXPORT OFFICE: 51 - 52 SOUTH STREET, NEW YORK, N. Y.
BRANCHES AND DEALERS IN PRINCIPAL CITIES THROUGHOUT THE WORLD

For more facts, use Request Card at page 18 and circle No. 337

THE NATIONAL CAR SHAKER

UNLOAD
✓ quickly
✓ safely

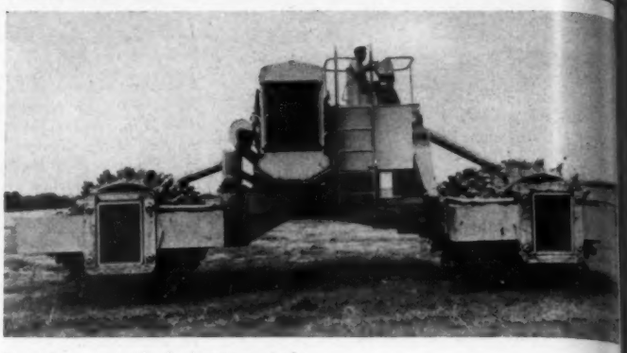
and with just
ONE MAN

Unload sand, stone and other aggregates just as fast as your conveyors can work. No bottleneck at unloading point.

Write today!

NATIONAL CONVEYOR & SUPPLY CO. 359 N. Harding Ave. Chicago 24, Illinois

For more facts, use Request Card at page 18 and circle No. 338



Fingering a panel of electric controls, the operator drives this Power Packer diesel-electric sheepsfoot forward or backward with equal speed and power.

Big sheepsfoot roller is self-propelled unit

A self-propelled sheepsfoot roller has been announced by R. G. LeTourneau, Inc.

An operator sits atop the Power Packer Model M-50-55 and fingers a simple panel of electrical controls driving self-propelled rollers backward and forward at 300 fpm under average working conditions.

The manufacturer points out that the diesel-electric rollers travel in either direction with identical speed and power. Any number of trips can thus be made over the same ground without turning the machine around.

The machine is 28 feet long, 14 feet wide, 12 feet high, and weighs 40 tons. Four independently oscillating drums, each 5 feet long and 5 feet in diameter, are driven by diesel motors geared to inner rims, with travel speed ranging to 5 mph. Generators are coupled to a 420-hp GM diesel.

The drums have a total of 480 tamping feet, each 9 inches long, with flat circular heads giving 10 square inches of surface.

For further information write to R. G. LeTourneau, Inc., Dept. C&E, 2399 S. MacArthur, Longview, Texas, or use the Request Card at page 18. Circle No. 30.

New power takeoff for heavy-duty trucks

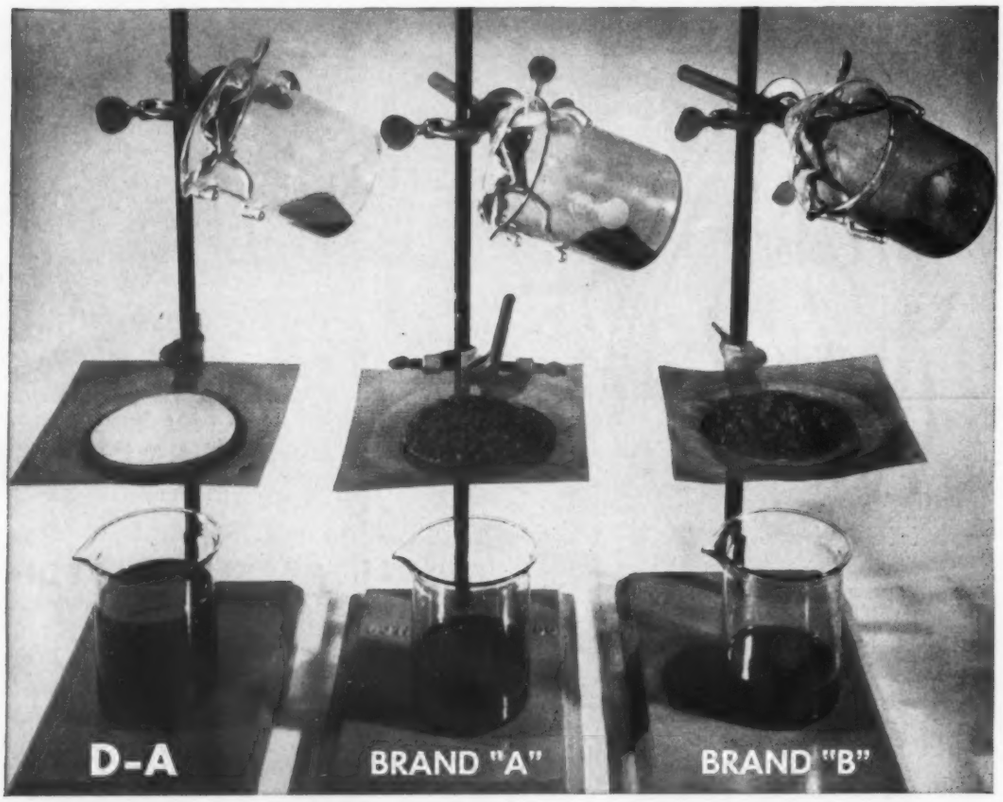
A full-torque flywheel power takeoff for heavy-duty International trucks is announced by the Motor Truck Division of the International Harvester Co.

The unit is available on V-8 and 6-cylinder-engine-powered chassis in the 21,000 to 41,000-pound gvw range.

Requiring no additional space between flywheel and transmission, the helical gear-driven PTO is said to provide a constant 88 per cent output of engine speed through the output shaft. It is capable of a sustained 75-hp output.

Because it fits within the same area as the trucks' original bell housing, no sheet-metal changes are required for installation. The output shaft is beneath the cab floor and does not require any tunnel or doghouse.

For further information write to the International Harvester Co., Dept. C&E, 180 N. Michigan Ave., Chicago, Ill., or use the Request Card at page 18. Circle No. 11.



Stop sludge, stop corrosion with D-A UNIVERSAL GEAR LUBE

The unretouched photograph above shows the results of a 24-hour accelerated oxidation or sludge test. On the right, two leading brands of gear lube are badly oxidized following the test while, on the left, D-A Universal Gear Lube remains clear, stable and capable of extended use.

Here's what this means to your operation: film strength is the element of a gear oil which prevents wear. To obtain high film strength, extreme pressure additives are placed in the lubricant. At a temperature of about 250° — often encountered in heavy-duty equipment operation — these additives can oxidize, as they have in the competitive oils seen above. When this oxidation occurs, the oils become extremely corrosive and rapid wear results. Tests prove that D-A Universal Gear Lube does not corrode, even at temperatures as high as 300° F.

D-A Universal Gear Lube does not sludge or oxidize under high operating temperatures because D-A research has established successful means of retaining the stability of D-A's high-quality base oil while maintaining the high film strength necessary for extra-heavy-duty equipment operation. For greater protection of *your* equipment under heavy load and high temperature conditions, specify D-A UNIVERSAL GEAR LUBE.

Lubricating heavy-duty equipment across the nation since 1919.

D-A LUBRICANT COMPANY, INC. • INDIANAPOLIS 23, IND.

For more facts, use Request Card at page 18 and circle No. 339

Two new front driving axles for conveying Ford tractors to 4-wheel drive are available from Elenco Products, Inc. The axles include a heavy-duty model for the Ford 1800 Series industrial tractor and a high-clearance model for the 600 and 800 Series. For further information write to **Elenco Products, Inc.**, 149 S. River St., Aurora, Ill., or use the Request Card at page 18. Circle No. 26.

New scarifier offered in 6 or 8-foot widths

The Danuser Machine Co. has available a scarifier in either 6 or 8-foot widths for use with two or three-point-hitch tractors.

The six or eight ripper teeth are individually shear-pin protected and have wear-resistant points that can be replaced.

Fast adjustment assures tooth

penetration up to 9 inches in depth on the Model I-S2 scarifier.

A spring-loaded mechanism makes raising of teeth easy when not in use.

Also available is a grader blade attachment with end plates, which converts the scarifier into a 6 or 8-foot-width box-type scraper for moving, grading, and leveling dirt.

For further information write to the Danuser Machine Co., Dept. C&E, 500 E. Third St., Fulton, Mo., or use the Request Card at page 18. Circle No. 81.

FOUNDATION CONSTRUCTION

CAISSONS

DRILLED AND UNDERREAMED

PIERS

SPECIAL DRILLING PROBLEMS

Offices in Atlanta, Ga., Pittsburgh, Pa., Washington, D.C., Cleveland, Ohio

Wire or phone for a quotation on your next foundation job — ANYWHERE IN THE WORLD

McKINNEY DRILLING COMPANY

HACOGDOCHES, TEXAS

Ph.: LOgan 4-8373 • P. O. Box 190

For more facts, circle No. 340

NEW! Presstite #55-MIL joint sealer

resists jet blast, heat, fuel and oil... cures quickly...will not track

Here is the strongest, toughest, most economical sealant of its kind on the market today . . . *laboratory tested and field-service proved!* Presstite No. 55-MIL Sealer is a Polysulfide Polymer, two-component, cold-applied sealing compound, specifically designed for sealing joints in Portland Cement Concrete, military and commercial airfield paving, exposed to the action and operational requirements of jet aircraft.

1. **Resists repeated blast** from high jet turbine thrust.
2. **Resists super-elevated temperatures** of after-burner "cut-in".
3. **Resists impregnation** by foreign materials.
4. **Resists action of jet fuels:** JP-3, JP-4, JP-5; "SKYDROL" (fire-resistant hydraulic fluid); also detergents and oils.
5. **Resists action of repeated freeze-thaw cycles,** will not crystallize at sub-zero temperatures.
6. **Maximum adhesion** to clean concrete surfaces.
7. **High cohesive strength.**
8. **High ductility,** remains ductile at *minus* 20°F.
9. **Fast curing,** sets up tack and is track-free within 60 minutes after application.

For a joint sealant that will *last*—specify Presstite No. 55-MIL Sealer *first*—get tomorrow's sealer today!

Note: A modification of No. 55-MIL is available for sealing joints in PCC highways, bridge decks, parking lots and industrial floors. Known as Presstite No. 55-HWY (Highway Type). Your inquiry is invited. Write Dept. C-2.

PRESSTITE-DIVISION

AMERICAN-MARIETTA COMPANY

3744 Chouteau Avenue • St. Louis 10, Missouri

For more facts, use Request Card at page 18 and circle No. 341

This new unit in the Worthington mixer line features a separate engine drive using a truck-type transmission.

FAST, TOUGH MIDDLEWEIGHT

..model-C-209 & CP-209 Concrete Saw

A medium sized unit with a capacity for large and difficult jobs . . . Economical to buy and operate. Balanced, rugged design and low maintenance dependability are important "Cost Cutting" features of the versatile 209 series.

Ask your nearest Concut representative or write for additional information.

Designed for Small Equipment Budgets

AVAILABLE WITH HYDRAULIC OR MANUAL PROPELLING

CONCUT

1845 Belcroft Ave., El Monte, Calif.

distributed in the Mid-west by . . .
CONCUT MID-AMERICA Inc., 5783 N. Lincoln Ave., Chicago 45, Ill.

For more facts, use Request Card at page 18 and circle No. 342

TENNESSEE — construction of farm-to-market road.

MASSACHUSETTS—mix-in-place street resurfacing job.

ILLINOIS—grading a large industrial site.

UTAH—maintaining a county road.

GALION® Model 160 MOTOR GRADERS

are always doing tough work on important jobs across the country.

They are the most useful units of construction equipment built today—for contractors on new jobs and for states, counties, townships, cities and towns on maintenance and repair work.

These rugged, powerful graders do all types of blading and scarifying work, regardless of location, earth condition, climate or weather.

30,020 pounds of working weight balanced to 160 diesel horsepower, with constant mesh transmission, produces the tractive effort that gives you the most push power at the blade ever developed in a grader its size.

Attachments for scarifying, bulldozing, snow-plowing, and an all-weather stand-up height cab are money making and useful attachments for you.

The hydraulic shiftable moldboard, power steering, and hydraulic fingertip controls for all operations are standard equipment.

Write today for complete specification literature.

THE GALION IRON WORKS & MFG. CO.
General and Export Offices—Galion, Ohio, U.S.A.
Cable Address—GALIONIRON, Galion, Ohio

OHIO — construction of state route 1.

PENNSYLVANIA—working on highway 29 construction job.

LOUISIANA—ditching operation on road construction job.

ARIZONA — bank-cutting on construction of state route 93.

GALION® ESTABLISHED 1907 MOTOR GRADERS • ROLLERS
VIBRATORY COMPACTORS • PNEUMATIC TIRE ROLLERS

THE GALION IRON WORKS & MFG. CO. Date_____
Dept. CE-20, Galion, Ohio
Please send me complete information on the Galion Model 160 Motor Grader.
Name_____ Title_____
Firm or Dept. _____
Street_____ City_____ State_____

For more facts, use coupon or Request Card at page 18 and circle No. 343

Transit-mixer capacity increased by new design

Fleetmaster and Fleetbuilder transit mixers featuring functional "swept-back" styling are available from the Worthington Corp.

According to the firm, this streamlining permits moving the center of gravity forward up to 16 inches in all models, thereby allowing the user to haul more concrete within legal limits.

A change from channel to pipe construction in the rear support frame also provides important weight saving with no loss in strength. Another weight-saving factor is provided by the truck-type transmission, which will be available for the first time in the Fleetbuilder series. This transmission has four speeds both in forward and reverse.

An improved water system provides single-operation filling through an overflow that fills both flush and mix tanks concurrently. The system utilizes lubricated valves, and it provides a Worthington self-priming pump for the syphon-type tank and a Worthington centrifugal pump for flush tanks. Electric clutches are standard on all models.

For further information write to the Worthington Corp., Dept. C&E, Worthington and Harrison Aves., Harrison, N. J., or use the Request Card at page 18. Circle No. 66.

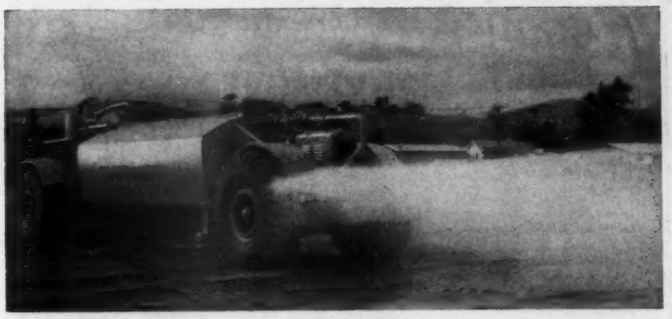
New backhoe attachment gives positive pressure

American Hoist has introduced a backhoe attachment that enables the operator to use almost the entire weight of the machine when digging through rock or hard ground.

According to the manufacturer, the unit is quite simple, and its operation (which is automatic) is based on the fact that hydraulic fluid is practically noncompressible.

The attachment is available for all sizes of American backhoes, and it can be field-installed on units now in use.

For further information write to the American Hoist & Derrick Co., Dept. C&E, 63 S. Robert St., St. Paul 7, Minn., or use the Request Card at page 18. Circle No. 32.



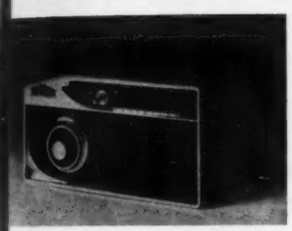
The semitrailer sprinkler tank mounted behind the Cat DW21 tractor is a Southwest Model STT-60, featuring a 6,000-gallon capacity and equipped with front, rear, and gravity or needling spraybar. A 6-inch pump, powered by gasoline engine, has a capacity of 1,500 gpm. A 2½-inch connection for fire-fighting hose is furnished as standard equipment. Tires are of the large 29.5×29 earthmover type with low pressure—below 50 pounds per square inch. For further information write to the **Southwest Welding & Mfg. Division,** Yuba Consolidated Industries, Inc., Dept. C&E, 3201 W. Mission Road, Alhambra, Calif., or use the Request Card at page 18. Circle No. 48.

For further information on any product described in this section circle the indicated number on the Request Card at page 18.

Two-way radio announced in medium-power class

The Mobile Radio Department of Allen B. Du Mont Laboratories, Inc., announces the Transicom, a medium-power transmitter and receiver unit for mounting under the dashboard of motor vehicles.

According to the company, this mobile radio set utilizes a blend of transistorization and other semiconductors, together with vacuum tubes, to achieve a design as maintenance-free as possible. The dimensions of the unit are 4½ inches high, 8 inches wide, and 12 inches deep.



The Type MCA-325 is designed for the 144 to 174-mc band and is offered with transmitter power ratings of 10, 20, and 30 watts.

According to the manufacturer, the Transicom is especially designed for split-channel frequencies.

For further information write to the Mobile Radio Dept., Allen B. Du Mont Laboratories, Inc., Dept. C&E, 750 Bloomfield Ave., Clifton, N. J., or use the Request Card at page 18. Circle No. 51.

New curing treatment for concrete floors

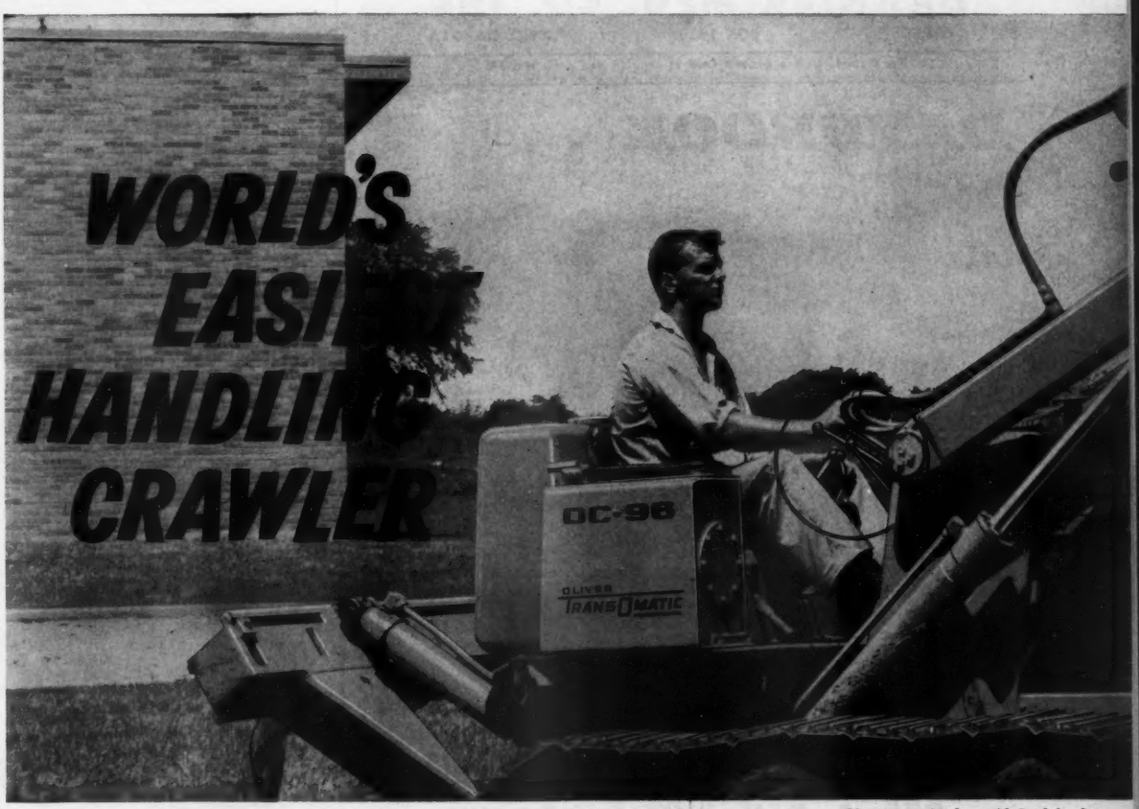
Tretol, Inc., has available a positive curing compound that at the same time hardens, seals, and dust-proofs newly placed concrete.

Dekote is a clear, ready-to-use liquid that is quickly and easily applied to fresh concrete by means of spray, roller, or brush equipment.

According to the manufacturer, Dekote effectively seals the pores of concrete floors against most acids, oils, greases, and other foreign materials.

For further information write to Tretol, Inc., Dept. C&E, 7252 W. 66th St., Chicago 38, Ill., or use the Request Card at page 18. Circle No. 36.

For more facts, circle No. 344→



62 gross engine h.p. with 1-yd. loader

Take the controls of a new Oliver Trans-O-Matic OC-96 Loader —and "let the tractor do the talking!"

Power shifting plus power steering (with three types of turns) makes the startling difference! The OC-96 is *so easy* to operate, it simply cannot be compared with older designs on this count—*or any other!*

You sit in a spacious, foam-rubber seat (offset for ideal visibility)...have full-freedom leg room in the wide, flush-deck compartment.

As for the controls, they're practically "in your lap." Levers for *power* steering, *power* reverse and *power* shift are placed directly ahead of the seat. Your arms are in "resting" position all the time. To brake or foot-steer, pedals do the job just as effortlessly.

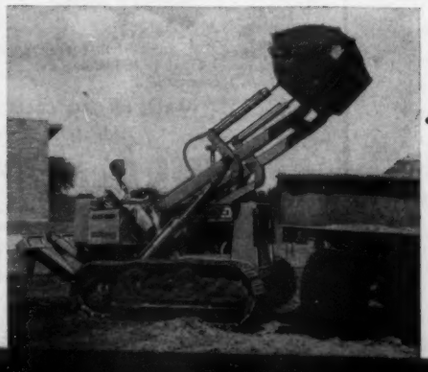
Easy operation, indeed! The *easiest* you ever had—plus.

NEW! 3 types of power turns—The only crawler its size giving you counter-rotation turns for about-faces in the tractor's own length—also spot turns and gradual turns.

NEW! Power shifting—Shift from forward to reverse instantly, on the go. No clutching, no gear-clashing with Oliver's all-hydraulic Trans-O-Matic transmission. Four speeds in high or low range—forward to 6.05 m.p.h., backward to 8.07 m.p.h.

NEW! Torque converter—The OC-96 has heaviest-duty torque converter (not automotive kind)—delivering full engine power for digging and crowding in fastest non-stalling operation. Advanced 62 gross h.p. diesel.

NEW 1-yd. loader design—See how the OC-96 is an *integral* tractor-loader minus high, hung-on parts and cross members. Loader side pedestals are actually part of the tractor for low profile, high stability, finest visibility and safety. Fast breakout, greatest dumping reach. No other its size has such rapid work cycle—is so rapid-reversing.



LOOK TO OLIVER FOR YOUR BEST BUY IN WHEEL AND CRAWLER TRACTORS

THE OLIVER CORPORATION

Dept. 2232, 400 W. Madison St., Chicago 6, Illinois

"Easy operation? Man, this OC-96 is the easiest I've ever seen!" "There has never been a crawler-loader like it for speedy, easy handling," says Lee Bruce of L. H. Bruce and Son, Middleton, Wisconsin.

On this big grading and loading assignment for a University of Wisconsin 2½-million-dollar student housing project, the OC-96 hustled the entire job. Six-yard trucks were put on a 2½-minute loading cycle. Counter-rotation turns cut time and working distance, permitted trucks to be spotted closer.

NEW CATALOG—"must" reading for cost- and comfort-conscious tractor users.

NO POUNDING - NO STRUGGLING WITH THIS EASY TO USE TOOL!

Branick AIR OPERATED

TRUCK TIRE REMOVER

LOOSENS STUCK OR RUSTED BEADS QUICKLY & EASILY

SMALL . . . COMPACT . . . POWERFUL, the Branick Truck Tire Remover will loosen stuck or frozen casings, without injury to bead, side wall or rim anywhere, where air pressure is available.

Hook Remover on rim, the air pressure draws clamps in to grip rim, while Piston Pressure Head forces bead down smoothly, loosening stuck or badly rusted casings with ease.

WRITE TODAY FOR COMPLETE DETAILS & PRICES

BRANICK MFG. CO. INC.

FARGO BOX 1937 NO. DAKOTA

For more facts, use Request Card at page 18 and circle No. 345

DAYBROOK . . .

'Our Daybrook dump train earns $50 A DAY EXTRA PROFIT'

VERNON J. VERPLANK, PRESIDENT, SPRING LAKE COAL & DOCK CO., SPRING LAKE, MICHIGAN

This Daybrook aluminum dump train carries a payload of 42 tons on each trip for Spring Lake Coal & Dock Company—*23 tons more per trip than units formerly used.* Mr. Verplank explains that the weight savings of the contractor-style body and telescopic hoist plus good axle weight distribution gives him this 23 tons extra payload—and $50 a day extra profit. Because aluminum bodies do not need painting, Mr. Verplank estimates an additional $300 savings each year.

These profits are typical of Daybrook Dump Body applications. Load-rated hoists matched to rugged bodies gives you bigger payloads. Careful engineering and manufacturing backed by an excellent warranty insure long equipment life, less downtime, and low maintenance. Daybrook offers a full range of equipment to fit your specific needs. There are 30 models of aluminum or steel bodies with capacities from 1½ to 27 yards in a choice of contractor, excavator, platform and rock body styles. And Daybrook has either an underbody or a telescopic hoist to team up with the body you select.

Daybrook will also design and build bodies to customer specifications. Consult your Daybrook distributor . . . you'll be dollars ahead.

Daybrook—manufacturer of quality hydraulic truck equipment for the construction industry—

Aluminum and Steel
DUMP BODIES

•

Telescopic and Underbody
HYDRAULIC HOISTS

•

POWER LOADER
(truck-mounted crane)

•

POWER GATE®
(hydraulic tail gate)

Write for FREE Literature

YOUNG SPRING & WIRE CORPORATION

DAYBROOK HYDRAULIC DIVISION
BOWLING GREEN • OHIO

Designed for light-duty operations, this 2,000-pound tractor is available in four models.

Four-wheel-drive tractor for light construction

Detroit Tractor, Ltd., announces the Model W4G062 4-wheel-drive tractor for light construction work. Available in four different hydraulically operated models—bulldozer, grader clam, roll bucket, and loader—the machine weighs 2,000 pounds and features a turning radius of 12 inches in a 6-foot curb-to-curb circle.

The operator's seat is placed forward for maximum visibility and better operating balance. Other features are: double-acting hydraulic cylinder with float position valve, and a new, fast service design that allows [illegible] removal of clutch or transmission.

The bulldozer unit includes a [illegible] fier rack and wing plates that can [illegible] easily detached. The blade is [illegible] to remove for replacement with [illegible] Detroit attachments. For plowing [illegible] it may be set at a 15-degree right [illegible] left angle.

For further information write [illegible] Detroit Tractor, Ltd., Dept. C&E, [illegible] E. Keating Ave., Muskegon, Mich., [illegible] use the Request Card at page [illegible] Circle No. 8.

Built for Brawn . . . Priced to Save

GENERAL SUPPLY COMPANY

Porta-Air 75 COMPRESSOR

Operates 45-lb. Rock Drill . . . Delivers over 75 cfm at 100 psi

*CHRYSLER heavy-duty industrial engine

*Light, fast, maneuverable!

*Stainless steel and heat-treated beryllium copper compressor valves for longer life

*All instruments and controls conveniently grouped . . . all working parts readily accessible.

*Smaller compressors also available

SKID MOUNTED MODELS also available, at substantial savings. Priced as low as $1995 f.o.b. Kansas City; $2045 f.o.b. Sacramento.

PAY LESS TO BUY, TO OPERATE

Porta-Air develops enough power for almost any compressor needs, yet costs far less than big bulky units that cannot give the same speed or maneuverability. Evenly spaced power impulses give smooth air flow — enough for 80-lb. paving breaker or three tampers, or two clay spades, or 3/16" sand blast nozzle. Takes only 1½ gal. of gas per hour. Optional fenders and tool boxes.

WRITE OR CALL COLLECT for complete information

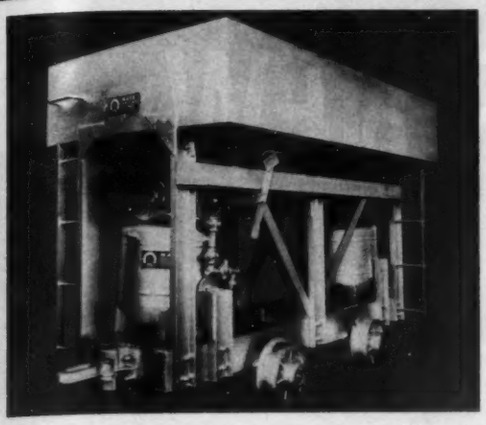
Industrial Compressor Division

GENERAL SUPPLY COMPANY

1920 McGee Trafficway, Kansas City, Missouri — Phone HArrison 1-5477 — TWX: KC 253
1830 "D" Street, Sacramento, California — Phone Gilbert 3-5928 — TWX: SC-65

We invite inquiries for jobber-distributors

For more facts, use Request Card at page 18 and circle No. 346



The Mayo "pea-shooter" car has a capacity of 4 cubic yards.

Car injects pea gravel in tunnel construction

A new "pea-shooter" car for tunnel work is offered by Mayo Tunnel & Mine Equipment. It is designed to inject pea gravel into the tail void formed by advancing the tunnel shield.

Made to pass through lock doors, the car, which has a capacity of 4 cubic yards, is loaded outside the tunnel and moved in behind the shield when the crew is ready to shove. Gravel flows by gravity from the hopper down into the two pea shooters on the car and is injected through hoses into the tail void. At the conclusion of the shove, the car is backed outside the tunnel and reloaded for the next shove.

Although the car is piped to handle pea gravel, it can be readily converted to handle cement grout.

For further information write to Mayo Tunnel & Mine Equipment, Dept. C&E, Box 1413, Lancaster, Pa., or use the Request Card at page 18. Circle No. 87.

Announce new radio with 10-mile range

A new short-range radio communications system is offered by the Vocaline Co. of America of Old Saybrook, Conn.

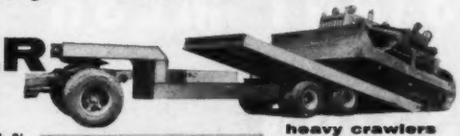
Called Commaire Model ED-27, the unit operates on the new Citizens Band at 27 megacycles. Comprised of an integrated transmitter and receiver in one chassis, housed in a rugged cabinet, Commaire has a range of approximately 10 miles. It has a transistorized power supply, and each unit will operate on both ac and dc. (For mobile use, 6 and 12-volt models are available.)

For further information write to the Vocaline Co. of America, Dept. C&E, Old Saybrook, Conn., or use the Request Card at page 18. Circle No. 9.

FROM 4 TO 22 TONS

Whatever the rig . . .
ONE MAN just drives on to load . . .

with a MILLER *Tilt-Top*



"OTS-22"
8' x 4' stationary platform with 8' x 16', or 20' long tilt section available. Gooseneck tongue. Tandem dual wheels suspended directly from tongue frame on new spring beams. 22 ton capacity.

"OTG-15"
Over-the-wheels 8' x 16' 6", or 20 ft. platform available. Gooseneck tongue. Dual wheels mounted on tandem axles with oscillating walking beam suspended directly from tongue frame. 15 ton capacity.

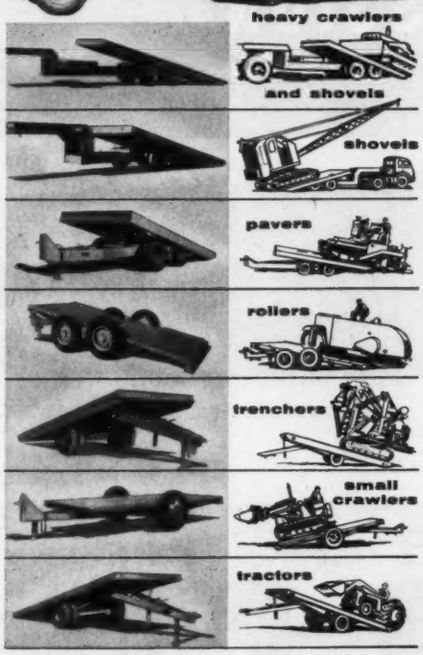
"OT-15"
Over-the wheels, 8' x 16' 6", or 20' platforms available. Eight wheels, dual assemblies, mounted on tandem axles with oscillating walking beam. 15 ton capacity.

"BT-10" & "CT-7"
Extra low, load angle, between-the-wheels platform. 76" wide—either 14' or 16' long. Four single wheels mounted on tandem axles with oscillating walking beam. 10 ton capacity on "BT" . . 7 ton on "CT".

"J-8", "8" & "10"
Heavy duty over-the-wheels models. 8' x 14' platform—16' and 18' platforms available. Single axle, dual wheels. Capacity: "J-6", 6 tons; "J-8", 8 tons; "J-10", 10 tons.

"C-4"
Extra low loading angle, between-the-wheels platform 8' x 14', 16' platform available. Two single wheels mounted on straight-thru H beam axle. 4 ton capacity.

"H-4"
Over-the-wheels, 8' x 14', or 16' platform available. Single straight-thru axle, dual wheels. Completely equipped with heavy duty, first line trailer tires. 4 ton capacity.



Now you can save the extra loading time and extra cost of larger more cumbersome trailers. MILLER Tilt-Tops include a model for almost any rig from large road graders down to the smallest farm type tractor. Now you can reduce labor loading cost to just TWO minutes of ONE man's time. See your distributor now — find out how MILLER's fast, between job loading and hauling can help you save duplicating expensive rigs.

See your MILLER distributor or write for FREE literature to:

Miller Tilt-Top Trailer Inc.
456-F S. 92nd St., Milwaukee 14, Wis.

For more facts, use Request Card at page 18 and circle No. 347

Why gamble when you buy used equipment?

When you buy a used machine you expect it to make money for you. And if you don't make money because it "wasn't what the man claimed it to be," you've made a bad deal . . . lost money. But there's no such risk when you buy from a Caterpillar Dealer. Here's why: He reconditions, classifies and guarantees his trade-ins to take the guess and gamble out of your buying. Because he does a lot of trading, he offers a wide selection of rigs—machines you can buy at realistic prices. For example:

1 **A "BONDED BUY"** in used Cat-built equipment is your best buy *anywhere*. This is an exclusive written guarantee bond, up to $10,000, assuring you parts and labor repair protection during the warranty period . . . similar to a new machine guarantee.

2 **A "CERTIFIED BUY"** covers units of any make in good condition. Machines with lots of life and profit left in them. This type of protection carries the dealer's written guarantee of satisfactory performance.

3 **A "BUY AND TRY"** deal is more than its name implies. It means a fair buy for the price asked. You are protected with the dealer's written money-back agreement. Something you won't get at most used equipment lots.

Only a Caterpillar Dealer will provide you with bonded protection, or written protection of any kind. He will also back you with prompt service and parts you can trust. You'll find a Cat Dealer listed in the Yellow Pages. Visit his used equipment lot for the best buys on the market. Compare his values with anyone else's . . . you'll soon join the family of satisfied Caterpillar customers.

Caterpillar Tractor Co., General Offices, Peoria, Illinois, U.S.A.

CATERPILLAR

Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

BEST BUYS IN NEW AND USED EQUIPMENT

For more facts, use Request Card at page 18 and circle No. 348

NOW! FOUR NEW MOTOR GRADERS

that will put you out front for the BIG JOBS in the 60's

BIGGER · HEAVIER · STRONGER ECONOMICAL TO OPERATE AND MAINTAIN · CONSTANT MESH TRANSMISSION

NEW MODELS	8-D	9-D	10-D	11-D
HORSEPOWER	83	100	125	160

PEAK PERFORMANCE AND ECONOMY FEATURES THAT PUT THESE MODELS **OUT FRONT**

see Huber-Warco for the finest in grading and rolling equipment

HUBER-WARCO COMPANY

For more facts, use Request Card at page 18 and circle No. 349

Single member frame designed to absorb heaviest shocks and strains. High arch design improves visibility, provides more room to maneuver blade.

Ruggedly built circle with three big wearing shoes. Designed to protect gear teeth from all loads except turning force.

Circle turn completely gear driven.

Weight where it counts. Two-thirds of machine weight on drive wheels.

Easy, positive steering with hydraulic booster activated by six pounds' hand pressure.

90-degree blade control on either side without leaving cab.

360-degree blade rotation without removing scarifier teeth.

Power sliding moldboard, optional, for faster work around abutments, stakes, and other obstructions.

Full-floating rear axle carries no machine weight.

Large, roomy deck with all controls within easy reach.

Deluxe cab, optional, has 18% more glass for greater visibility.

Six speeds forward and reverse; optional creeper gear adds three more speeds in each direction.

Moving one lever changes direction in same gear.

Other constant mesh transmission features include (1) easy shifting, including range shift, at all speeds (2) shift rails interlocked to prevent multiple engagement (3) pressure flood lubrication (4) ball and tapered roller bearings throughout transmission and final drive (5) helical transmission gears for quiet operation (6) machine-cut, case-hardened alloy steel transmission shafts and gears.

HUBER
WARCO

MARION, OHIO
U. S. A.

TANDEM ROLLERS

MOTOR GRADERS

MAINTAINER

3 WHEEL ROLLERS

The Model 600-TC is now offered as the standard 600-cfm unit in the Schramm line of unistage portable air compressors.

The addition of a new double-tapered shape to the E. D. E... bituminous hauling tanks is announced by the company. The ... is said to offer positive center drainage with greater ... through the use of a conical cross-section shape. This design ... a range of four different hauling-tank designs. Previously ... the line were the regular tapered-shape design with rear ... regular cylindrical-shape tank, and the straight oval tank. For ... formation write to **E. D. Etnyre & Co.**, Dept. C&E, 200 Jeffer... gon, Ill., or use the Request Card at page 18. Circle No. 64.

Air compressor delivers 600 cfm at 100 psi

Schramm, Inc., offers an improved 600-cfm air compressor, the Model 600-TC.

According to the manufacturer, the 600-TC will deliver its full 600 cfm of air at 100 psi even under continuous operation at altitudes as high as 10,000 feet.

The engine has an operating speed of 1,200 rpm.

A major feature of the compressor is the single liquid cooling system which circulates through the entire unit. Since the engine and compressor are connected by a hand-operated clutch, this system permits both the engine and compressor to be brought up to operating temperature before being placed under load.

Standard equipment includes: electric starter with 12-volt battery and generator, lubricating oil filters on both engine and compressor, and the Schramm Pneumastat that automatically regulates the speed of the unit in accordance with the demand for compressed air placed on it. A variety of special equipment is also available.

For further information write to Schramm, Inc., Dept. C&E, 900 E. Virginia Ave., West Chester, Pa., or use the Request Card at page 18. Circle No. 29.

New 2-way radio unit is fully transistorized

A new, compact, transistorized mobile 2-way radio is announced by the Radio Corp. of America.

Designated Model LD-150, the unit is available in 30 or 60-watt models and can operate on any frequency in the 148 to 174-megacycle band.

The transmitter, receiver, and power supply are housed in a dustproof steel case that can be mounted under a vehicle's dash. The control unit also can be dash-mounted separately, with the main equipment case installed in a truck cab.

A "heat sink" encircling the equipment case helps reduce the LD-150's internal temperature up to 40 per cent, with a resulting increase in the life of components.

The unit's printed circuits are clearly numbered in road-map fashion for greater ease of maintenance.

For further information write to the Radio Corp. of America, Dept. C&E, Building 15-1, Camden, N. J., or use the Request Card at page 18. Circle No. 2.

Lima announces new 5-yd. shovel, 140-ton special crane

TYPE 1800

- Standard 5-yd. shovel with 35-ft. boom, 26-ft., 10-in. dipper handle; 7 or 8-yd. dipper for coal handling
- Converts to 112-ton crane
- Variable capacity dragline

TYPE 1800SC

- 140-ton special crane with 21-ft. wide truck base for stability with big lifts
- Converts to variable capacity dragline

These new Limas are designed to permit knock down for job to job transportation. Side assemblies come off as a unit—including belts, crawler chains and sprockets. Counterweights are removable. Backhitch-telescopic-type gantry folds down to 17-ft., 5-in. overhead clearance.

LOW MAINTENANCE REQUIREMENTS—You get more for your money when you buy a LIMA. They last longer, perform better, and require less maintenance. Lima offers you all of these important features in a single machine—

- **Air control**
- **Torque converter drive**
- **Anti-friction bearings at all important bearing points**
- **Large diameter clutches and brakes**
- **Two-shoe-type swing-propel clutches**
- **Combination rope-chain crowd**
- **Single-inside-type dipper handle, 15" square**
- **Extra long crane booms and special jibs available**
- **Convertible to crane or dragline**
- **9'-10¼" dia. roller path**
- **Six cone rollers, six hook rollers**
- **Standard or long, wide crawlers**
- **Diesel or electric power**
- **Knock down for highway transportation**
- **Independent two-drum boom hoist**
- **Independent propel**
- **Auxiliary third drum**
- **Power load lowering**

FACTS AND FIGURES on the new 1800 and 1800SC are yours for the asking. See your nearby Lima distributor today or write to Baldwin-Lima-Hamilton Corporation, Construction Equipment Division, Lima, Ohio.

Lima Type 1800 5-yd. shovel—one of five Limas owned by Mittry Construction, Los Angeles. Shown excavating at Abiquiu earth fill dam project, Shama River, N. Mex.

Add three new hammers to electric-tool line

Three new models of portable electric hammers are announced by the Porter-Cable Machine Co.

Designated Kango, the units are smaller versions of the familiar pneumatic pavement breakers. They feature a self-contained design and run on 110-volt current, eliminating the need for converters or rectifiers.

Designed principally for concrete and brickwork, the hammers are said

to offer an unusually wide range of applications. The only maintenance required is a weekly oil check.

Drilling ranges for these three hammers vary from 3/16 inch to 3 inches.

For further information write to the Porter-Cable Machine Co., Dept. C&E, 117 Seneca St., Syracuse 4, N. Y., or use the Request Card at page 18. Circle No. 16.

Offer gooseneck trailers in three load capacities

Offered in both drop and level-deck models, Talbert Challenger equipment haulers are available with 18, 27, and 36-ton load capacities.

Included as standard equipment on both models are: high-tensile-steel construction throughout, Hendrickson tandems, 2-inch longitudinal oak flooring, lashing rings, I.C.C. clearance lights, and directional lights. The low-bed model features a removable gooseneck.

For further information write to Talbert Trailers, Inc., Dept. C&E, 7955 W. 47th St., Lyons, Ill., or use the card at page 18. Circle No. 93.

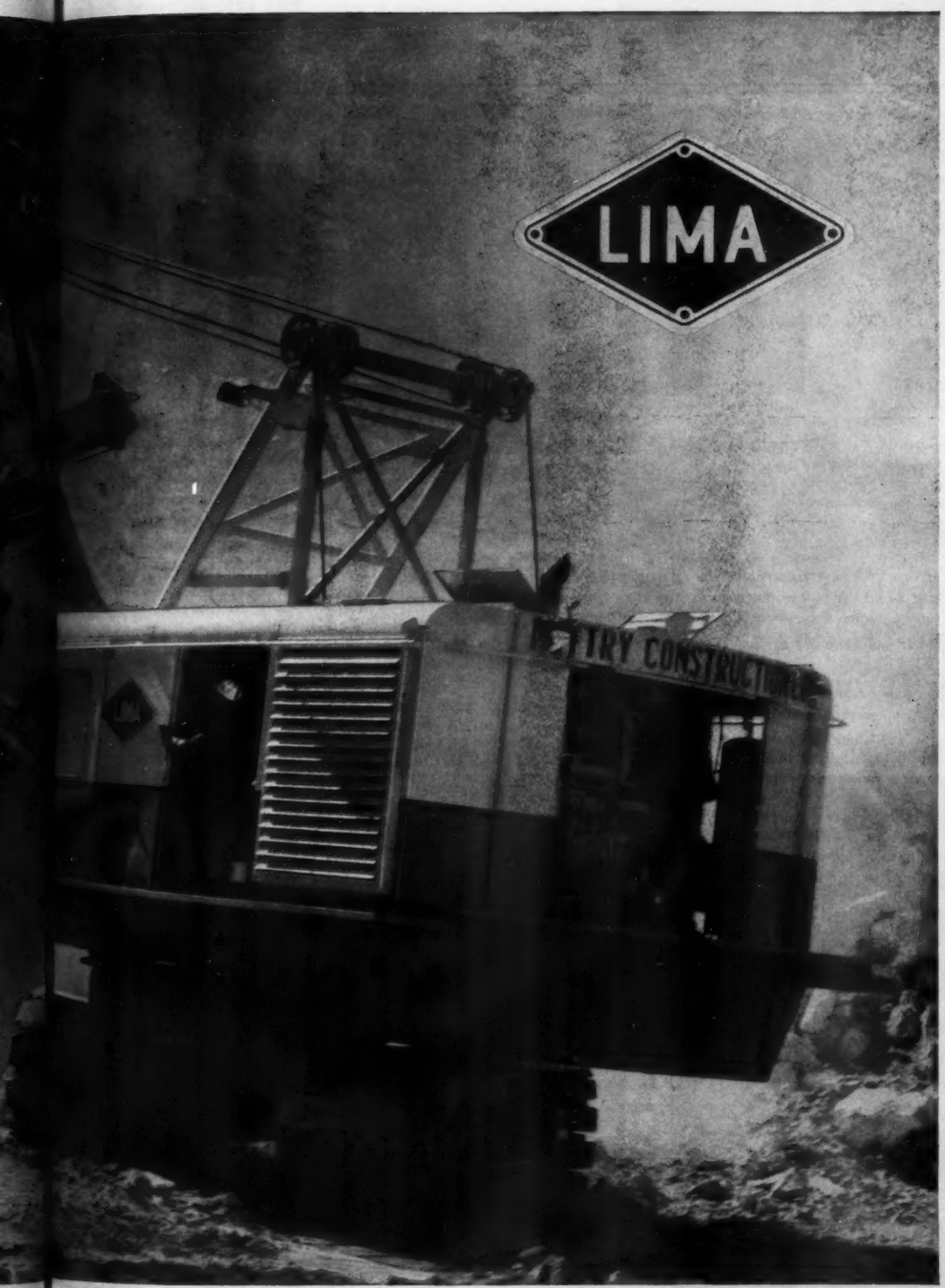
Rope-thread striking bars for deeper rock drilling

Rope-thread striking bars of alloy steel and heavy-duty design, said to ensure greater rigidity for deeper rock drilling, are offered by Brunner & Lay, Inc.

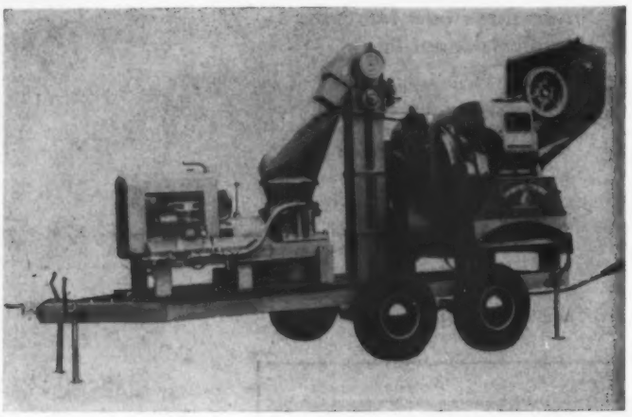
The bars are available in all popu-

lar shanks and thread sizes, with rope or standard threads, and with or without ring seals.

For further information write to Brunner & Lay, Inc., Dept. C&E, 9300 King St., Franklin Park, Ill., or use the card that is bound in at page 18. Circle No. 92.



LIMA Construction Equipment Division, Lima, Ohio
BALDWIN · LIMA · HAMILTON
Shovels • Cranes • Draglines • Pullshovels • Roadpackers • Crushing, Screening and Washing Equipment
600
For more facts, use Request Card at page 18 and circle No. 350



To simplify transportation and also to reduce man-power requirements, Engineered Equipment, Inc., offers the Jetcreter mounted on its own trailer, and complete with a Model 11S mixer as well as bucket elevator. Mixers of various sizes and types and an alternate belt conveyor instead of bucket elevators are available. With the Super Jetcreter and 600-foot compressor, capacities to 12 cubic yards per hour are possible. For further information write to **Engineered Equipment, Inc.,** Dept. C&E, 1001 Linden Ave., Waterloo, Iowa, or use the Request Card at page 18. Circle No. 82.

New-type drilling bucket has fast-dumping design

A new drilling bucket for boring gummy, sticky clay is announced Calweld, Inc.

The bucket is designed with a degree, side-opening door instead

the standard bottom opening acti Since the door comprises half circumference of the bucket, unl no difficulty is encountered in du ing sticky clay, states the manufa turer.

For further information write Calweld, Inc., Dept. C&E, 7222 Slauson Ave., Los Angeles 22, Cal or use the Request Card at page Circle No. 42.

4-wheel tractor-scraper with Hi-Torque brakes

Heavy rear dump with Hi-Torque brakes

For your heavyweight vehicles get double braking power with Hi-Torque brakes

Operators of heavy off-road vehicles are finding that Hi-Torque brakes boost their profits—and that's a feature to consider when choosing *your* heavy equipment.

Hi-Torque brakes give the "heavyweights" adequate safety and controllability—stop vehicles in approximately half the distance required for conventional two-shoe brakes. With this reserve braking power, cycle time can be reduced as equipment is operated in higher gear. Operators can tackle grades usually considered unsafe, since Hi-Torque brakes don't fade, will stop a fully loaded vehicle downhill!

Specify Hi-Torque brakes on your equipment—ask the vehicle manufacturer for details. Or write *B. F. Goodrich Aviation Products, a division of The B. F. Goodrich Company, Dept. CE-2, Troy, Ohio.*

2-wheel tractor with Hi-Torque brakes

Full circle contact with drum is provided by Hi-Torque brakes giving maximum effective braking surface in the same size unit. Hi-Torque stops vehicles twice as fast as conventional brakes.

B.F.Goodrich

Hi-Torque brakes

For more facts, use Request Card at page 18 and circle No. 351

DUDGEON HYDRAULIC JACKS

SALES RENTALS

CAPACITY TO 600 TONS

FOR:
- PILE TESTING
- UNDER-PINNING
- BRIDGES
- PIPE PUSHING

Write to Dept. M

DESIGNERS and MANUFACTURERS OF

Hydraulic Units For Special Applications

RICHARD DUDGEON INC

789 BERGEN STREET BROOKLYN

• ST 8-4040 •

For more facts, circle No. 352

Heavy-duty fork-lift useful in prestress work

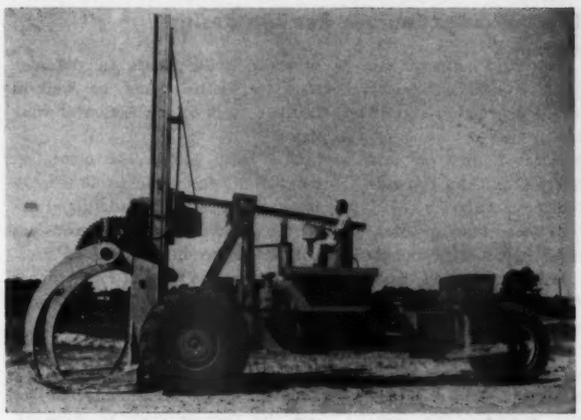
A new fork-lift truck said to be useful for handling prestressed-concrete members is available from R. G. LeTourneau, Inc.

Designated Model FT, the machine has only three wheels. According to the manufacturer, it is particularly valuable in unpaved work areas where loads range from 10 to 17 tons. The new unit has electric motors geared only to the front two wheels, the third wheel, in the rear, is used for stability and steering.

Forks of the Model FT are 5 feet long and can hoist loads 16 feet above the ground. The machine is available with or without "tusks" to grip the loads. Kicker chains, for ejecting loads, also are optional equipment.

Power is supplied by a 195-hp diesel engine, driving ac and dc generators under the hood. Simple electric switches and potentiometers govern all work functions.

For further information write to R. G. LeTourneau, Inc., Dept. C&E, 2399 S. MacArthur, Longview, Texas, or use the Request Card at page 18. Circle No. 24.



The Model FT fork-lift truck.

Generator accessories add mobility, versatility

Two new accessories for the 1960 line of Onan tractor-driven emergency generators are announced.

They are a two-wheel trailer, specifically designed and built for easy mounting and towing of Onan power-takeoff generators; and a telescoping-type tumbling rod for quick, positive connection of generator to tractor.

The trailer's all-steel bed is predrilled for mounting any one of the three Onan 4, 7, or 12-kw power-takeoff generators. The trailer is 45½ inches long, 30 1/16 inches wide, 15¾ inches high, and weighs 80 pounds.

The telescoping tumbling rod fits all 1⅜-inch tractor power takeoffs; adapters for other sizes may be obtained. The unit has a minimum length of 36 inches; maximum, 53½.

For further information write to D. W. Onan & Sons, Inc., Dept. C&E, 2515 University Ave. S. E., Minneapolis 14, Minn., or use the Request Card at page 18. Circle No. 94.

Two ways to lower compaction costs with fast, high-density Lima Roadpackers

- ***Compact to 100% density in one pass***—often possible with Lima Roadpackers.
- ***Lay fewer courses***—Roadpackers compact even 10 and 12-in layers in minimum number of passes.

High-production Roadpackers speed construction of highways, parking lots, airfields and earth-fill dams. Vibratory compaction works from bottom to top; fills voids, eliminates shoving. Roadpackers work forward or in reverse. Compact in varying widths and speeds. Travel on-the-job or over-the-road at highway speeds.

Lima Roadpackers are extremely popular with cost-conscious contractors everywhere who are interested in both high performance and low maintenance. Vibrator units are completely sealed, self-lubricated. No external moving parts; no daily maintenance required.

Two Model Roadpackers now available

MODEL D—Six hydraulically controlled vibrator shoes compact up to 600 tons per hour in a 13 ft.,1 in. swath. End shoes fold up for narrow width compaction path or highway travel at speeds up to 30 mph. Compacts from 20 to 95 feet per minute using 4, 5 or 6 shoes.

SUPER—More than doubles compaction performance of any multiple-shoe vibrator machine. Designed for really big jobs. Two rows of six vibrator shoes, hydraulically controlled, compact "tough-spec" materials on production basis from 26 to 268 feet per minute in widths to 15 ft. Highway travel to 24 mph; power brakes and steering, tandem rear drive.

Get compaction cost-cutting facts from your nearby Lima distributor or write to Baldwin-Lima-Hamilton Corporation, Construction Equipment Division, Lima, Ohio.

DISTRIBUTORS IN PRINCIPAL CITIES OF THE WORLD

LIMA Construction Equipment Division, Lima, Ohio

BALDWIN · LIMA · HAMILTON

Shovels • Cranes • Draglines • Pullshovels • Roadpackers • Crushing, Screening and Washing Equipment

605

For more facts, use Request Card at page 18 and circle No. 354

To Keep Power Equipment Running To Stand Guard on the Job . . .

THE ANSWER IS Anthes

The WEATHERCAP®

Rain cannot get in a vertical exhaust protected by Weathercap. Range of sizes to fit 1" to 6⅜"O.D. Fully automatic

OPENS at the first touch of exhaust pressure, CLOSES the instant the engine stops . . . Now standard equipment on over 35 nationally known names in tractors and powered equipment.

The FLAME-GUARD Construction Torch

New self-righting torch with an exclusive square-type burner which STAYS LIT in the worst weather . . . Burning time of 24 to 48 hours . . . Quality Anthes construction throughout.

Get the full answers and literature from

Anthes Co.

FORT MADISON, IOWA

For more facts, circle No. 353

Steel utility buildings feature flexible design

Two all-steel utility buildings are offered by the Martin Steel Corp. for building and construction crews' field houses.

Both prefabricated units are said to be easy to erect, and can be readily dismantled for moving.

The 7×7×7-foot Martin Stor-House features 4-foot-wide double doors, and is fireproof and rust-resistant. If larger space is needed, extender sections of 2 feet each are available to give additional length.

The Model 101 is the larger utility building, and it comes in a variety of sizes. Also fireproof and rust-resistant, it may be obtained with overhead roller doors in different sizes, or with sliding or walk-in doors, as well as a selection of windows.

The basic Model 101 comes in lengths of 7 feet 6 inches, 10 feet, 15 feet, and 20 feet, with additional extender sections available in 5-foot lengths to provide any desired size.

Widths range from 11 feet 3 inches to 22 feet 6 inches, and side-wall heights are 8 feet and 10 feet.

For further information write to the Martin Steel Corp., Dept. C&E, Longview Ave., Mansfield, Ohio, or use the Request Card at page 18. Circle No. 86.

Austin-Western hydraulic crane gently lowers a 3-ton block of concrete into place on flat bed truck.

Austin-Western hydraulic crane does anything . . . goes anywhere on $6,500,000 highway project

"It's fast, mobile and versatile. We use the Austin-Western hydraulic crane to do just about everything on the job," reports Norman J. Maggione, general superintendent and vice president of the Bero Construction Co., Waterloo, N.Y.

Two places at once

Bero's $6,500,000 project, a part of the Niagara section of the New York Thruway calls for six bridges in 1¼ miles. Mr. Maggione says, "We have one A-W crane on the job and wish we had more. Our job is split in sections by railroad yards and city streets. Because of their speed and mobility, the self-propelled, rubber-mounted A-Ws can just about be in two places at once.

"Using the A-W crane has doubled our speed in setting bridge panels. It maneuvers easily among tubular pilings and can turn on a dime. It has plenty of traction and power on any type surface.

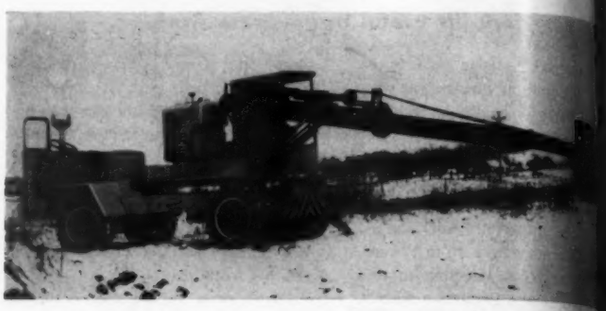
Economical to operate, maintain

"We've got lots of economy right along with outstanding job performance. One man on an A-W can often do the work of four. We haven't had any maintenance problems.

"The A-Ws are radio-dispatched. People are always calling for one to get them out of a spot or to speed things up. It's the most versatile piece of equipment on the job!"

Learn more about this Model 210 hydraulic controlled precision crane with 18-ft. telescoping boom and 360° swing, all-wheel drive and steering. Contact your nearby Austin-Western distributor or write us today.

Austin Western 100th YEAR 1847 AUSTIN-WESTERN 1947 PIONEERS IN PROGRESS
CONSTRUCTION EQUIPMENT DIVISION, AURORA, ILL.
BALDWIN · LIMA · HAMILTON
Power graders • Motor sweepers • Road rollers • Hydraulic cranes
For more facts, use Request Card at page 18 and circle No. 355



Maximum visibility, coupled with HydraXcavator's short wheelbase, permits the operator to work the machine in extremely tight spots.

New excavating machine offers many features

The ⅜-yard-capacity Model BR-5 HydraXcavator is announced by Davis Engineering, Inc., of Dowagiac, Mich.

Full swing on the upper mechanism enables the machine to load out in any position. A Continental F-226 engine provides a road speed of 40 mph. A special declutch in the drive shaft permits coupling of hydraulic drive by remote control from the upper mechanism.

Hydraulic outriggers on the rear of the chassis permit maximum stability under adverse conditions. Steering, forward and reverse, locking of brakes, and setting of outriggers are all operated from the upper mechanism cab.

Standard on the Model BR-5 is the new HydraScope for maintenance of embankments and waterways. The HydraScope boom has a reach of over 20 feet from center of swing with a telescoping action of 7 feet. The end attachment may be rotated 90 degrees either side of center.

For further information write to Davis Engineering, Inc., Dept. C&E, P. O. Box 127, Dowagiac, Mich., or use the Request Card at page 18. Circle No. 46.

DIESEL ENGINE GENERATOR SETS

Immediate Delivery from Inventory!

Any voltage; 50 or 60 cycle. Available in stationary, mobile or portable model. Following listing is only partial.

1420 kva Fairbanks-Morse model 38D-8⅛ (photo above)
1375 kva General Motors model 278A
1250 kva General Motors model 567
938 kva General Motors model 567
625 kva General Motors model 278A
625 kva American Locomotive Co. model 539
412 kva Worthington model CC
375 kva General Motors model 268A
312 kva General Motors model 268A
250 kva General Motors model 268A

A. G. SCHOONMAKER Company, Inc.
Foot of Spring St. Sausalito, Calif.
EDgewater 2-1490
50 Church St., N. Y. 7, N. Y. Digby 9-4351

For more facts, circle No. 356

YOU CAN'T OUTGROW A ROLCOR ROLLER

STATIC OR VIBRATORY

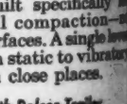
Whether your job is . . . Crease rolling . . . Driveways . . . Parking lots . . . Patching . . . Tennis courts . . . Sod rolling . . . Maintenance . . . you won't outgrow the usefulness of a Rollpac.

That's why thousands of contractors, landscapers, institutions and others make Rollpac their "number one" unit. One week on *your* job will prove to you why Rollpac is the top selling one-ton roller in the United States.

Here's a two-ton vibratory roller that produces compaction to equal or exceed static rollers weighing eight tons! Vibrapac is 100% American designed and built specifically for asphalt and soil compaction—no corrugation of surfaces. A single lever clutch shifts from static to vibratory action. Works in close places.

Easy to transport with Rolcor Trailer.

WRITE FOR FULL INFORMATION AND LITERATURE



ROSCO MANUFACTURING CO.
ROLCOR DIVISION
3118 Snelling Ave. • Minneapolis 6, Minn.

For more facts, circle No. 357

...er for the Model M200E is supplied ... 164-hp V-8 engine, and a 4-speed, ...chromesh transmission is standard.

...addle carrier truck ...dles loads to 10 tons

... new medium-capacity straddle-... carrier has been introduced by ... Hyster Co., offering increased ...neuverability and performance for ... handling of loads up to 20,000 ...nds.

...esignated Model M200E, the unit ...es many components with the ...vier Model M300E, including ...er plant, drive train, and hoist ...em.

...eatures include a shorter turning ...ius and road speeds up to 52 ...h.

...our-wheel power steering pro-...es maneuverability for close-...arter operations. Power brakes are ...o standard.

...ptional features include LPG fuel ...tem, Perkins P6V diesel engine, ...l special drive sprockets.

...or further information write to ... Hyster Co., Dept. C&E, Box 4318, ...rtland 8, Ore., or use the Request ...rd at page 18. Circle No. 83.

Polyethylene film, as a curing and moisture-proofing material for concrete, is receiving one of its biggest applications to date just outside the twin cities of Minneapolis-St. Paul. More than 900,000 square feet of the clear tough plastic has been laid beneath the foundations of Northwest Orient Airlines' new $18 million general office and overhaul base at Wold-Chamberlain Field. In preparing the foundations of the base, crews unroll Visqueen film in 14-foot widths onto the bare earth floor. A reinforcing framework is then put in position and the concrete for the slabs placed directly onto the film. It is claimed that the use of Visqueen film on this project will result in savings of thousands of dollars in maintenance and repair costs. For further information write to the **Plastics Division, Visking Co.,** Dept. C&E, 6733 W. 65th St., Chicago, Ill., or use the Request Card at page 18. Circle No. 72.

MUCH BETTER THAN METAL VENT PIPE

because it's made of

NEOLON NEOPRENE COATED NYLON

- Lower cost per foot.
- Can't tear—tough, wear-resistant—mil-dew proof—bright yellow for high visibil-ity.
- Weighs only a fraction of metal pipe —will not rust or dent like metal pipe.
- One man can install—easy to hang and couple—takes only 3% storage area of metal pipe.
- Ideal for Mainline ventilation—brings air supply to working face. Lasts in-definitely.
- 3" to 36" diameter—all standard lengths. Also wire reinforced tubing for pulling out foul air.

Send for Catalog 109

A B C AMERICAN BRATTICE CLOTH CORP.

WARSAW, INDIANA

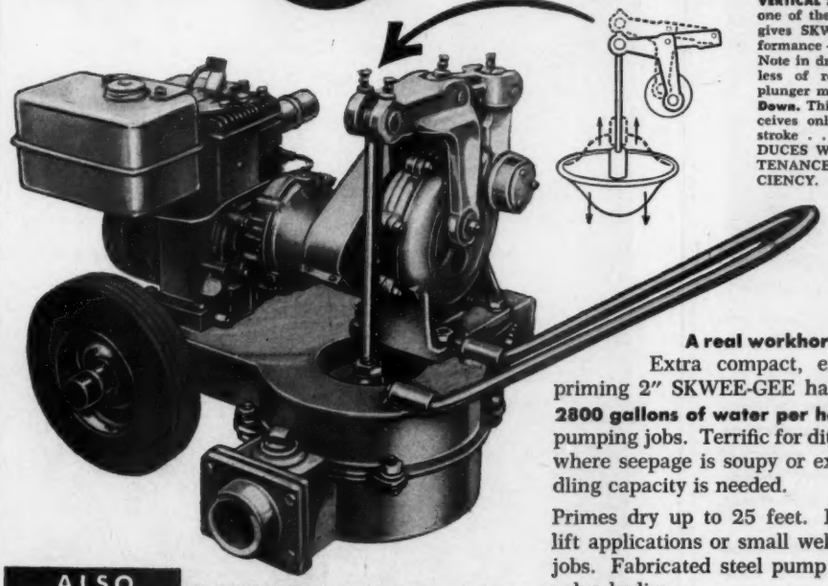
233 ARGONNE ROAD

For more facts, circle No. 358

never before such a compact, easy-to-move-about, big performing, long lasting *diaphragm pump* . . .

NEW

CMC 2" SKWEE-GEE



VERTICAL STROKE ACTION . . . just one of the many new features that gives SKWEE-GEE unbeatable performance — MUCH LONGER LIFE. Note in drawing at left that regardless of rocker arm position . . . plunger moves *only* **Straight Up and Down.** This means diaphragm receives only straight up and down stroke . . . which GREATLY REDUCES WEAR AND PUMP MAINTENANCE — INCREASES EFFICIENCY.

A real workhorse at only 165 lbs.!

Extra compact, extra rugged, self-priming 2" SKWEE-GEE handles in excess of **2800 gallons of water per hour**— on toughest pumping jobs. Terrific for ditch or trench work, where seepage is soupy or exceptional air handling capacity is needed.

Primes dry up to 25 feet. Excellent for high lift applications or small well-point dewatering jobs. Fabricated steel pump body. Removable valve bodies.

Available with gasoline engine **(MODEL FD-L2)** or electric motor **(MODEL FD-L2E).**

ALSO... **3" SKWEE-GEES** in gasoline engine and electric motor models. 3" and 4" Ball Valve and Flap Valve Diaphragms. A COMPLETE LINE of DUAL PRIME Centrifugal Pumps, Pressure-Flo Pumps and Jetmaster Pumps.

MAIL COUPON TODAY FOR NEW

FREE

SKWEE-GEE DIAPHRAGM PUMP CATALOG

CONSTRUCTION MACHINERY CO., Waterloo, Iowa

☐ Rush Catalog with complete details on NEW CMC 2" SKWEE-GEE.

☐ Send name of nearest CMC pump distributor.

NAME

COMPANY

ADDRESS

CITY STATE

CONSTRUCTION MACHINERY CO., WATERLOO, IOWA

For more facts, use coupon or Request Card at page 18 and circle No. 359

Installed on the Massey-Ferguson Model 202 tractor, the Lev-L-All provides front-end stability and planing ability.

Attachment makes tractor more versatile machine

The Lev-L-All, an attachment that turns the Massey-Ferguson Model 202 tractor into a grader, maintainer, and leveler is announced by the Massey-Ferguson Industrial Division.

Standard equipment includes hydraulically operated leaning front wheels and lateral shift. Maneuverability is supplied by the long wheelbase and short turning radius, and the 145 degrees of turn on the circle allows close positioning for [illegible] a ditch." Turning radius of [illegible] foot 3-inch rig is 28 feet.

The Lev-L-All is easily [illegible] detached to permit the tra[illegible] used for other atachments, [illegible] manufacturer.

For further information [illegible] the Massey-Ferguson Indu[illegible] vision, Dept. C&E, 1009 S. [illegible] Wichita, Kans., or use the [illegible] Card at page 18. Circle No. 3[illegible]

Offer hydraulic derrick with 6-ton capacity

Rectangular side legs and an extra-long middle-leg hydraulic cylinder are two important features of the new Series 3750 hydraulic derrick offered by the Holan Corp.

The middle-leg hydraulic cylinder allows the derrick head to come closer to the ground for forcing the digger deeper into the soil. The integral middle leg with live boom action provides extra power for butt-pulling; body-loading transformers, cable reels, or other equipment weighing as much as 5,000 pounds; and forcing diggers into hard-frozen, rocky soil.

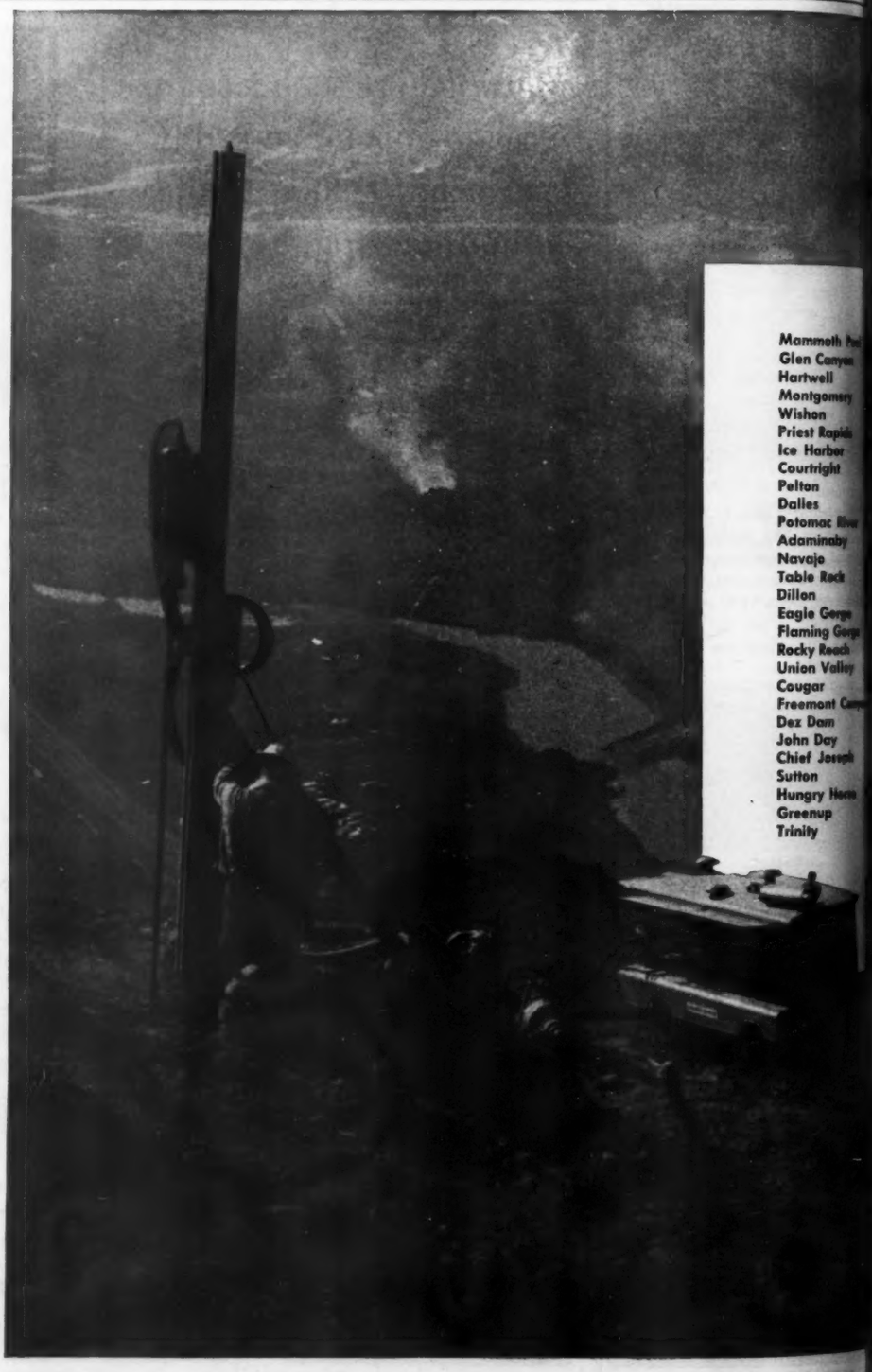
The Series 3750 hydraulic derrick can set poles up to 75 feet in length.

The Series 3750 has a 12,000-pound-capacity rating and is capable of setting poles 75 feet in length.

According to the manufacturer, one man can raise the derrick in 35 seconds, stow it in position in 40 seconds. A sensitive hydraulic system with a pump driven by power takeoff controls every movement of the machine.

The Series 3750 has a working range of 195 degrees. It swings from its over-the-cab storage position to within 5 feet of the ground for easy threading of the winch line.

For further information write to the Holan Corp., Dept. C&E, 4100 W. 150th St., Cleveland, Ohio, or use the Request Card at page 18. Circle No. 84.



The high reach of the Lull loader permits filling any dump body from one side.

New 1½-yard loader has 5-ton lifting capacity

A 1½-cubic-yard front-end loader with a dumping height of 10 feet 6 inches and a 10,000-pound lifting capacity is announced by the Lull Engineering Co.

Due to its longer wheelbase design, the unit requires no ballast and can back up a 35-degree incline safely with a full bucket. According to the manufacturer, 4-wheel drive and the 26-inch rear-axle oscillation practically eliminate loss of traction on any type of terrain.

For maximum safety and visibility, the operator is placed high and toward the rear of the machine, completely out from underneath the bucket and away from any of the moving parts of the machine.

Even though this loader has a long wheelbase, its turning radius is only 8 feet 8 inches.

For further information write to the Lull Engineering Co., Dept. C&E, 3045 Highway 13, St. Paul 11, Minn., or use the Request Card that is bound in at page 18 of this issue. Circle No. 14.

Add two new machines to crane, shovel line

The Lima Types 1800 and 1800-SC are offered by the Lima Works, Construction Equipment Division, Baldwin-Lima-Hamilton Corp.

As a standard shovel, the Type 1800 is equipped with a 35-foot boom, 26-foot 10-inch dipper handle, and 5-cubic-yard dipper. As a crane it has a lifting capacity of 112 tons; dragline capacity is variable.

The Type 1800-SC is a 140-ton-capacity crane with ground-gripping stability. Extra-long crane booms with jibs are available for high lift work. Both 1800 and 1800-SC are air-operated rigs.

The Lima Type 1800 is equipped with a 35-foot boom, 26-foot 10-inch dipper handle, and 5-cubic-yard dipper.

The truck base is available in two widths: the standard width for the Type 1800 and the extra-wide for the 1800-SC.

Each side frame assembly, including belts, crawler chains, and sprockets is removable as a unit. Counterweight segments are also removable, and the backhitch-telescopic-type gantry can be folded to a height of 17 feet 5 inches.

Both models are available with diesel or electric power with torque-converter drive.

For further information write to the Baldwin-Lima-Hamilton Corp., Construction Equipment Division, Dept. C&E, Lima, Ohio, or use the Request Card that is bound in at page 18. Circle No. 45.

elping build today's biggest dams

-GARDNER-DENVER

THERE'S NO SUBSTITUTE FOR MEN

construction—on jobs large
d small—the trained Gardner-
enver equipment specialist has
elped many solve air equipment
roblems, minimize down time
nd lost production. At Gardner-
enver there's no substitute for
en—our 100-year philosophy of
rowth.

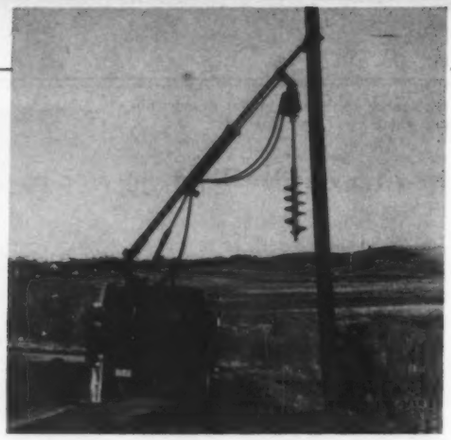
Gardner-Denver—the No. 1 choice in compressors . . . rock drills . . . and air tools

EQUIPMENT TODAY FOR THE CHALLENGE OF TOMORROW

GARDNER-DENVER

Gardner-Denver Company, Quincy, Illinois
In Canada: Gardner-Denver Company (Canada), Ltd., 14 Curity Ave., Toronto 16, Ontario

For more facts, use Request Card at page 18 and circle No. 360



The derrick's 4-foot hydraulic stinger is fully extended to set a pole. Note that the stinger can be adjusted while the derrick is under load.

Offer hydraulic derrick for utility bodies

A single-arm hydraulic derrick designed for mounting on standard utility bodies is announced by Tel-E-Lect Products, Inc.

Designated Model CD, the unit is designed to lift loads up to 8,000 pounds safely. Instead of using an outrigger for balance, it has a hydraulic jack that drops down from just behind the rear right wheel. It can work in a wide range from front to back of the truck on the right side and in a full arc behind the truck.

A maximum sheave height feet is provided. The CD derr a 4-foot hydraulically ad stinger that, coupled with the head extension, gives a versatile ing radius. The hydraulic stinger be extended and contracted wh derrick is under load.

For further information wr Tel-E-Lect Products, Inc., Dept. 10001 Minnetonka Blvd., Minn 26, Minn., or use the Request C page 18. Circle No. 10.

To obtain further information on any of the products described in this section, circle the number given at the end of the item on the handy Request Card that is bound in at page 18 of this issue.

New 180-amp welder is versatile machine

A newly designed 180-amp welder is announced by The Lincoln Electric Co.

According to the manufacturer, the dial-type control of the unit provides easy positive setting of the welder output over a wide amperage range.

Electrodes from the smallest to 3/16-inch size can be used to weld materials from 20-gage to ½-inch or thicker plate.

The new design is said to provide unusually stable arc characteristics, and the unit will weld mild steel, low-alloy steel, and 18-8 type stainless steel. Operating on 220-volt single-phase power supply, the compact, lightweight welder can be easily moved to the job when necessary.

Other features of the new design include a voltage input adjustment to insure full output performance under all power-supply conditions. Permanent cable connections insure safe, trouble-free operation of the welding unit.

For further information write to The Lincoln Electric Co., Dept. C&E, P. O. Box 3115, Cleveland 17, Ohio, or use the Request Card that is bound in at page 18 of this issue. Circle No. 34.

BARBER-GREENE BATCHOM

HOW TO GET TO FROM YOUR NE

Invest after getting full facts on which of 17 Barber-Greene continuous mix and batch plants is custom fitted to your nee

Before you buy a new asphalt plant, spend a few moments learning whether a continuous mix or batch-type plant can produce the top tonnage and profits for your operating conditions.

And you can be sure of getting full facts on both type plants from the man who sells 17 sizes of continuous mix and batch plants—your Barber-Greene distributor. He does no short line selling, but rather can analyze your operation and pencil out the profit picture on the type plant he recommends.

Should his analysis show a Barber-Greene Continuous Mix plant is your best investment, you get these 10 benefits: 1) up to 10% savings on initial plant costs; 2) sustained high production at lowest per ton cost; 3) up to 10% lower operating costs in horsepower and fuel savings; 4) up to 10% lower maintenance costs per ton; 5) higher resale value; 6) less skilled operators required; 7) continuous preset proportioning accuracy; 8) fastest of any plant average setup time; 9) buy and use only nents needed for a specific job; and 10) mo use only components needed for your next

Should your operations be best served by y Barber-Greene BatchOmatic, you get all th clusive features: 1) only completely new and automatic plants—no warmed-over desig push-button mix changes with no penalty for matic operation; 3) most rugged and reliable matic control system cuts downtime in h greatest production per dollar of plant inves 5) all movement in new deeper, shorter pug mixing action giving most thorough mixing time; 6) fastest discharge from largest pug mi ing plus fast hydraulically activated gate; 7 10% more tonnage hourly with advanced principle; 8) over 25% greater sand screening ity; 9) completely pre-wired plant is standard ment; 10) completely hydraulic operation is st

...s-fired steam cleaner for heavy equipment

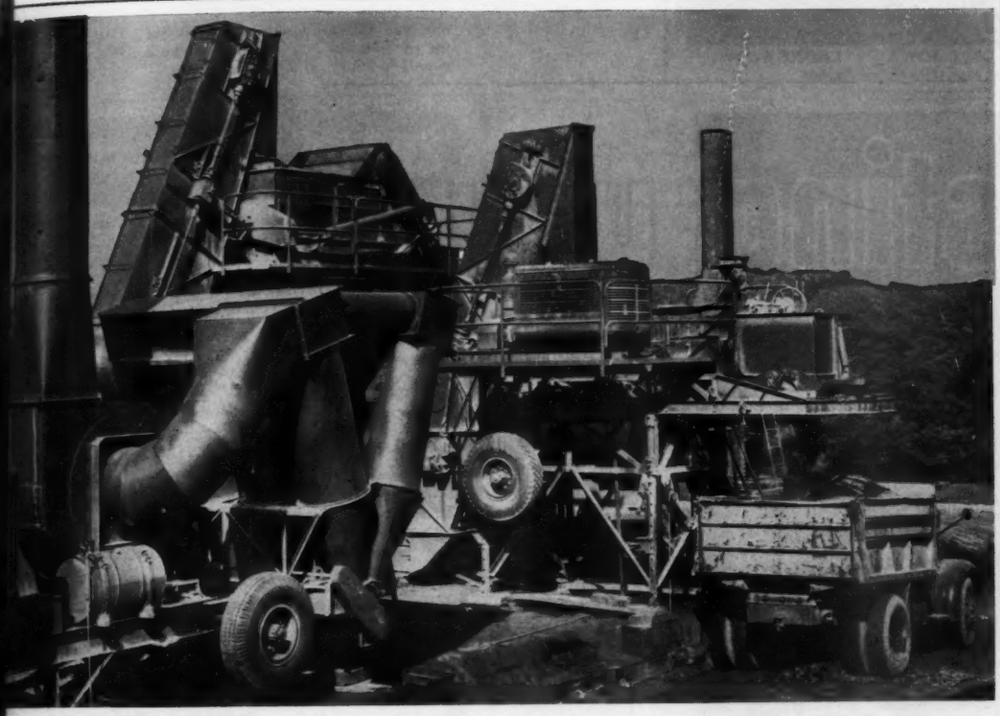
The Malsbary Mfg. Co., announces ... Model 330 fully automatic gas-...d steam cleaner for truck and ...vy-equipment cleaning where a ...ge flow of solution is required on ... almost continuous stop-and-go ...is.

The unit delivers 330 gallons of ... solution hourly at 60 to 90 psi. ... is a stationary unit, but nozzle-...ntrolled guns (choice of one or ...o) enables the user to clean ef-...ctively while stationed 100 to 200 feet distant from the cleaner.

The solution tank holds 60 gallons, and the burner is adaptable to natural gas, butane, propane, or manufactured gas.

The Model 330 measures 63 inches long, 36 inches wide, and 62 inches high. It weighs 1,200 pounds.

For further information write to the Malsbary Mfg. Co., Dept. C&E, 845 92nd Ave., Oakland 3, Calif., or use the Request Card at page 18. Circle No. 57.



...ER-GREENE CONTINUOUS PLANT

...TONNAGE, PROFITS ...E ASPHALT PLANT

...ment—no need of auxiliary air compressor; ...1) plant comes completely assembled in sec-...for fastest erection, disassembly.

...ou need a power control or manually oper-...batch plant, you can choose from eight equally ...ctive models in the reference chart.

...nd a little time with your Barber-Greene dis-...or before you buy any asphalt plant. You'll ...'s the wisest investment you ever made.

One of these Barber-Greene plants gives you top tonnage, profits

	CONTINUOUS MIX		BATCH-TYPE	
Model	TPH Range	BatchOmatic Model	Power Control	Manual Model
840-B	55	2000 lbs.	892...2000 lbs.	890...1000 lbs.
845	90	3000 lbs.	893...3000 lbs.	891...1500 lbs.
847	160	4000 lbs.	894...4000 lbs.	892...2000 lbs.
848-A	250	5000 lbs.	895...5000 lbs.	
		6000 lbs.	896...6000 lbs.	

Only Barber-Greene offers four different finishers plus a new versatile road widener —equipment sized for all your needs.

World's No. 1 Manufacturer of Asphalt Paving Equipment

Representatives in Principal Cities of the World

Barber-Greene BG

Main Office and Plant AURORA, ILLINOIS, U. S. A.

Plants in DeKalb, Illinois..Detroit..Canada..England..Brazil..Australia

For more facts, use Request Card at page 18 and circle No. 861

Twin-engine exec plane is fully pressurized

A light twin-engine executive aircraft with a fully pressurized and air-conditioned cabin is announced by the Aero Design & Engineering Co.

Known as the Alti-Cruiser Model 720, the plane is available in either a 4 or 6-place configuration with complete lavatory facilities.

Selection of desirable cabin altitude is adjustable between 1,000 and 10,000 feet. The cabin rate of pressure change for climb and descent is fully adjustable between 50 and 2,000 fpm. According to the manufacturer, the cabin pressure control system allows selection of cabin altitudes normally from 5,000 to 7,000 feet below the actual aircraft altitude.

The Alti-Cruiser has a range of approximately 1,500 miles and a cruising speed of about 230 mph. Takeoff distance to clear a 50-foot obstacle at sea level is 1,265 feet.

For further information write to the Aero Design & Engineering Co., Dept. C&E, Box 118, Bethany, Okla., or use the Request Card at page 18. Circle No. 73.

Mobile radiotelephone has 5 to 10-mile range

A Citizens Band mobile radiotelephone is offered by the Kaar Engineering Corp.

Called Model D, the phone is a 5-watt unit designed for operation on any two of the 23 available channels in the 26.96 to 27.33-mc frequency band. It is available for either 12-volt dc or 117-volt ac operation. With average operating conditions, the effective range is said to be usually between 5 and 10 miles.

This new radiotelephone is a dual-channel unit with crystals on both transmit and receive. A signal-level meter and power-output peaking controls are featured. It also has a super-heterodyne circuit with automatic volume control. Other standard features include a positive squelch control and volume control.

The unit is very compact and weighs only 10 pounds.

For further information write to the Kaar Engineering Corp., Dept. C&E, 2995 Middlefield Road, Palo Alto, Calif., or use the Request Card that is bound in at page 18. Circle No. 28.

A "MUST" FOR EFFICIENT PAVING

New Enclosed Type

Batch Truck

Cement Boxes

New Enclosed Type Batch Truck CEMENT BOXES offer controlled mixing, automatic operation, better cement with less labor.

Made in two sizes to fit standard dump bodies. Write for detailed literature and

LOW FACTORY PRICES!

Sioux City Foundry & Boiler Co.

EAST 8th & DIVISION SIOUX CITY, IOWA PHONE 5-7967

For more facts, use Request Card at page 18 and circle No. 362

Product Parade

Mounted forward on the left side for ice control, the Y-2's spinner spreads evenly in widths of 5 to 40 feet.

One-man spreader is multipurpose rig

The work advantages of three man spreaders in the same rig incorporated in the multipurpose Way Model Y-2 reversible spre

Designed for seal-coating, ice-c trol, and road-widening projects unit can be operated by one m from the cab. The standard mode powered by a 12.5-hp air-cooled gine that drives the conveyor cha cross auger, and spinner assem

For further information write the Highway Equipment Co., D H20-6, Dept. C&E, 616 D Ave., N. Cedar Rapids, Iowa, or use the R quest Card at page 18. Circle No.

Device probes subsurface to depth of 18 feet

The Goldak Co., Inc., announce new electronic detection instrum

Designated Signalmaster M TR-1A, the device locates and t pipes, cables, and conduits to a d of 18 feet. It can also be used measure the depth of a line and pin-point valves, caps, risers, junct boxes, and other subsurface obje

Completely transistorized, the u is lightweight and requires only one flashlight batteries for power.

For further information write The Goldak Co., Inc., Dept. C&E, 1 W. Glenoaks Blvd., Glendale 1, Ca or use the Request Card at page Circle No. 39.

The Signalmaster Model TR-1A

What's it **costing** **you** to train new drivers?

$1,000? $1,500? $2,000? These are normal costs for training new operators —except for TORQMATIC DRIVE owners. They report saving up to $2,000 every time they break in a "rookie."

Reason? TORQMATIC takes guesswork out of shifting – ends shock-load damage and the need for engine-disconnect clutch repairs. TORQMATIC *automatically* adjusts engine output and speed to load or terrain changes.

TORQMATIC owners know that no operator can handle the "stick" and clutch as smoothly and efficiently—*every* time – as an Allison TORQMATIC. They bought TORQMATIC because they know, too, what it costs when rookies make a shifting and clutching mistake.

How can you eliminate these costs?

Look beyond first cost and see the total cost. Then change from clutch-pedal equipment to Allison TORQMATIC. You'll save costly engine-disconnect clutch replacements, too-frequent overhauls of overtaxed engines, repair bills for shock-load-damaged axles and drive lines.

Why not get the full story today? See your equipment dealer or write Allison.

ALLISON DIVISION OF GENERAL MOTORS
Indianapolis 6, Indiana
In Canada: General Motors Diesel Ltd., London, Ontario

Allison TORQMATIC

TORQMATIC® DRIVES

THE MODERN DRIVE FOR MODERN EQUIPMENT

For more facts, use Request Card at page 18 and circle No. 363

Concrete mixer trucks remounted with flotation tires are able to operate without breakdowns or stalling in loose-sand, swampy or hilly building sites, the Harmo Tire & Rubber Corp. reports. In blow-sand areas of New Mexico and Arizona, where mixer trucks formerly had to be winched to the job site, delivery time on a 5-yard load reportedly was cut from as much as 3 hours to 30 minutes, when flotation tires were used. Tire sizes were 18.50×20 rear and 15.40×20 front, replacing 10.00×20 originals. For further information write to the **Harmo Tire & Rubber Corp.**, Dept. C&E, 1050 18th St., Detroit 16, Mich., or use the Request Card at page 18. Circle No. 25.

Attention **CONTRACTORS**

The Greer School will train your men to operate or service all types of heavy equipment. Training conducted on hundreds of acres of land set aside for this purpose to simulate actual operating conditions. Our placement department can also provide men you need. Write for information and tuition rates.

MECHANICS *training*

The Greer heavy equipment training shops provide highly practical instruction covering every step in maintenance and service of all types of current equipment. Training includes gasoline and diesel engine work and hydraulic systems. Students work on actual equipment in addition to classroom training.

OPERATORS *training*

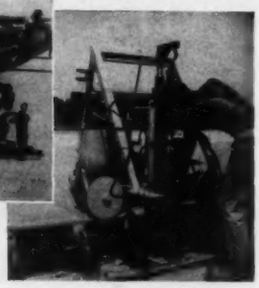
Greer heavy equipment operator course graduates are ready to step into any job in the field. Practical classroom training on theory and operation is supplemented with hundreds of hours of operating every type of road building, earth moving and construction equipment.

For information write to Registrar
EARTH MOVING DIVISION

Greer TECHNICAL INSTITUTE
BOX 278, BRAIDWOOD, ILL.

For more facts, circle No. 364

HYDRAULIC PIN PULLER
for
CONCRETE
FORM PINS



FAST • EFFICIENT
ECONOMICAL
DEPENDABLE

THE COMPACT SIMPLICITY and high speed performance designed into this tool makes it possible for one man to pull effortlessly several hundred form pins per hour regardless of pin length or form size.

HYDRAULIC MOTOR OPERATED with single-hand lever propels machine both forward and reverse for easy maneuverability and quick spotting over the pin.

FOR FURTHER INFORMATION and free demonstration, consult your local PEMCO dealer or contact factory direct.

PEMCO, INC. 7 North Roselle Road, Roselle, Illinois

For more facts, circle No. 365

To obtain further information on any of the products described in this section, circle the number given at the end of the item on the handy Request Card that is bound in at page 18 of this issue.

High-capacity conveyor works with auger drills

The Fairfield Engineering Co. announces a new high-capacity conveyor for use in handling nonabrasive materials.

Designed primarily to work with auger drills, it features a capacity of up to 210 tph. It can be attached to the auger and moved with it to the next location.

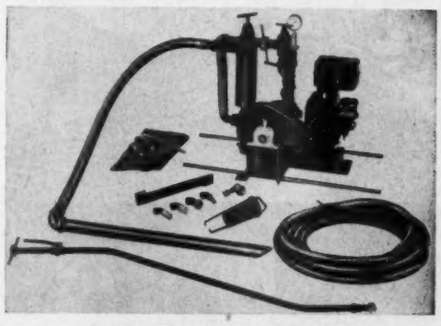
Fairfield's new rubber-mounted conveyor has a 210-tph maximum capacity and features discharge heights ranging from 10 to 17 feet.

The conveyor is rubber-mounted and has discharge heights ranging from 10 to 17 feet. Flight speed is 120 fpm.

Optional features include hydraulic steering, hoisting, and chute swing. A choice of electric motor, or gasoline or diesel engine is available as the job requires.

For further information write to The Fairfield Engineering Co., Dept. C&E, 324 Barnhart St., Marion, Ohio, or use the Request Card that is bound in at page 18 of this issue. Circle No. 33.

PORTABLE SPRAYER



TARCO "Portable Vac-U-Sprayer"

Do more and better work with this light weight, simple-to-operate, inexpensive spray outfit.
Ideal for: Concrete Curing. Building perfect contoured patches. Constructing driveways, parking lots, walks, tennis courts. Waterproofing foundations, roofs. Subsealing pavements.
Uses gasoline engine driven, positive displacement pump. Has built-in material screen, adjustable pressure regulator, and by-pass. Sucks and sprays liquids direct from any container. Comes complete with assorted nozzles, 25 ft. spray hose and hand gun. Multiple-head, tail-gate spray bar and weed control spray guns available.

Let your dealer or us give you complete details on this and other TARCO paving equipment.

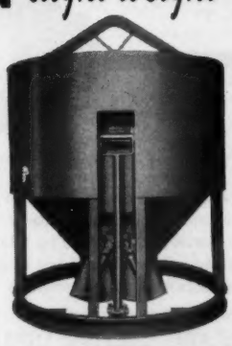
TARRANT MFG. CO.
31 Jumel Place, Saratoga Springs, N. Y.

For more facts, circle No. 366

NEW! JOHNSON® *light-weight* CONCRETE BUCKETS

SIZES:	NET WEIGHT*
½ cu. yd. . . .	. . . . . 355 lbs.
¾ cu. yd. . . .	. . . . . 455 lbs.
1 cu. yd.	. . . . . 700 lbs.
1½ cu. yd. . . .	. . . . . 840 lbs.
2 cu. yd.	. . . . .1075 lbs.

*approx.



Light in weight, low in cost, this all-new series of concrete buckets from Johnson gives high ratio of capacity-to-weight. Makes each pour more profitable for you! Features: all-welded steel hopper, frame. All working parts above discharge point and well within bucket outline—protected during work, storage, shipment. 50° slope of cone bottom gives complete discharge of medium-slump concrete. Short-stroke, easy leverage handle. Double-clam gates. Stainless steel shafts in nylon bearings. Write today!

— — — —Mail to C. S. JOHNSON CO., Champaign, Ill.— — — —

Send more information on ..... cu. yd. light-weight concrete bucket

NAME _____

COMPANY _____

STREET _____ JB10 C&E

CITY, STATE _____

CHAMPAIGN ILLINOIS • STOCKTON, CALIF.

For more facts, circle No. 367

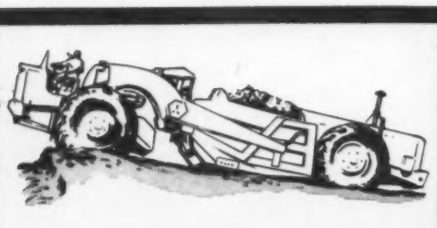
Equipped with a standard 82-foot boom, the Towercrane Model 35A/45 can handle a load of 3,080 pounds at a radius of 82 feet. The load can be increased to 6,600 pounds at a radius of 32 feet 9 inches. Maximum hook height is 176 feet with extended 90-foot boom, and maximum reach is 91 feet 9 inches. Electrically operated, German-built Towercranes erect themselves under their own power and are easily transported from job to job. For further information write to **Universal-Liebherr, Inc.**, Dept. C&E, Zelienople, Pa., or use the Request Card at page 18. Circle No. 21.

Announce tractor shovel with 1⅝-yard capacity

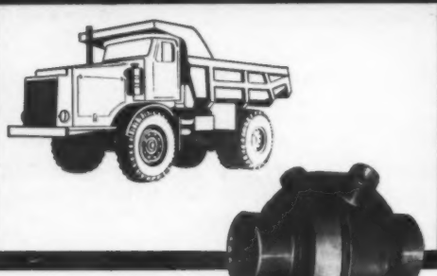
The N. P. Nelson Iron Works, [illegible] has available the Model 150, a [illegible] cubic-yard-capacity tractor shovel.

Designed for extra-heavy-[illegible] work, the machine features [illegible] slung arms that afford maximum [illegible] erator visibility and safety, and [illegible] bucket with 40-degree tipback [illegible] ground level. The unit has a 9-[illegible] maximum dumping height under [illegible] bucket edge. It has a forward reach of 5 feet 2 inches at a 7-foot dump[illegible] ing height.

Standard equipment is an Allis[illegible] Torqmatic full-reversing transmission with a 3.5:1 stall ratio. The [illegible]



how **NoSPIN** DIFFERENTIALS IMPROVE HEAVY CONSTRUCTION EQUIPMENT OPERATION



NoSPINS are the only differentials manufactured that direct all available power to drive wheels having traction—giving full-time equipment control. NoSPINS automatically permit differences in wheel speeds when required for making turns or negotiating obstructions in a forward or rearward direction.

NoSPINS ARE EASY TO INSTALL—no special tools needed. NoSPINS ARE ECONOMICAL—you can obtain them from your dealer or specify them on your original equipment.

WRITE TODAY FOR COMPLETE DESCRIPTIVE LITERATURE
862

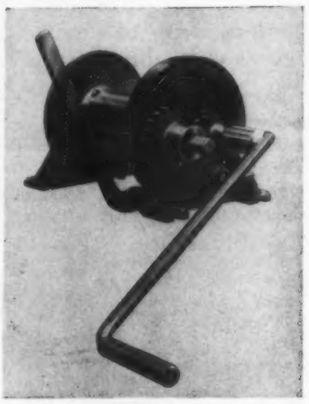
DETROIT AUTOMOTIVE PRODUCTS CORPORATION
Manufacturers of THORNTON Four Rear Wheel DRIVES, NoSPIN Differentials and Super LOAD-BOOSTER third axles
8705 GRINNELL AVENUE DETROIT, 13, MICHIGAN, U. S. A.

For more facts, circle No. 368

Hand brakes optional on new hand winches

Beebe Bros. Mfg. Co. has introduced new models of its ½-ton and 1-ton hand winches that are available with hand brakes as an optional feature.

The ½-ton Beebe winches are offered in either 3-inch or 6-inch drum



widths, with or without hand brakes, and have a gear ratio of 5.3:1. The 1-ton winches are offered in 3 or 6-inch drum widths, and with two speed ranges, 5.3:1 and 10.5:1.

Two-way spring-operated holding dogs are standard on all ½-ton and 1-ton models.

For further information write to the Beebe Bros. Mfg. Co., Dept. C&E, 2724 Sixth Ave. S., Seattle, Wash., or use the Request Card at page 18. Circle No. 78.

Core drill features 4,500-foot capacity

The Acker Drill Co., Inc., announces the availability of a new core drill.

Known as the Presidente, the drill has a capacity of 4,500 feet, using an AX (2-inch) bit.

The rig features a hydraulic drill head, a new automatic chuck, and a power-operated air brake and clutch. It is available for skid mounting or truck mounting and with diesel, gasoline, or power-takeoff drive.

For further information write to the Acker Drill Co., Inc., Dept. C&E, P. O. Box 830, Scranton 2, Pa., or use the Request Card at page 18. Circle No. 44.

START ENGINES EVERY DAY WITH SPRAY...

STARTING FLUID FOR DIESEL & GASOLINE ENGINES
Get more starts, quicker starts, at lower cost with SPRAY STARTING FLUID. Both the fluid and propellent burn . . . there's no waste! Each pressurized can contains enough fluid for many starts . . . starts that will sustain combustion until a smooth running engine can take over. Our greater supply of "vapor pressure" at all temperatures, atomized at a high initial rate, shortens cranking and warm up time, reduces dilution, prevents electrical and starting system wear, saves wasted man hours and equipment down-time. SPRAY is atomized for safe application and quantity control . . . use only as much as the engine requires. Field-proven SPRAY STARTING FLUID will start the toughest engine down to 65° below zero . . . but for year 'round economy start engines every day with SPRAY! Sold through automotive jobbers everywhere.
Ask about INSTNSTART closed system starting.

Insist on the can with the "balky donkey" trademark.
SPRAY PRODUCTS CORPORATION
P. O. Box 844 • Camden 1, New Jersey

For more facts, circle No. 369

MOBILE OFFICE Units are low in cost . . . Built to your specifications . . . There's a unit to fill your every need.

Because MOBILE OFFICE Units are easy to move from job to job, they enable you to have office, engineering, paymaster and other facilities at every point of your operation.

These units are economical, time saving, rugged and durable. They are self-containing, and are available with air-conditioning, and can be fitted to your specifications.

MOBILE OFFICES are being used by major contractors and other major businesses throughout the United States. In every case they have proven their worth.

Remember, whatever your needs may be, a MOBILE OFFICE Unit can be built to fill your requirements.

If it's Mobile . . . We Build It!

MOBILE OFFICE, INC.
Phones: DOrchester 3-1048
7314 Stony Island Avenue, Chicago 49, Illinois

For more facts, circle No. 370

For more data on any item, circle indicated number on card at page 18.

The new Nelson extra-heavy-duty tractor shovel is powered by either a gasoline or diesel Hercules engine.

speeds, forward and reverse, range from 3.3 to 27 mph. Timken-Detroit 4-wheel-drive planetary axles with torque proportioning differential are standard.

Power is supplied by a Hercules Model G-298H 107-hp gasoline engine or Hercules D-298H diesel.

For further information write to the N. P. Nelson Iron Works, Inc., Dept. C&E, 850 Bloomfield Ave., Clifton, N. J., or use the Request Card at page 18. Circle No. 47.

Portable units available in road-base mixer line

Eagle stabilized-road-base mixers are now available in compact portable units.

The mixer can be readily hauled to the site of operations by a truck-tractor. There, it is easily raised by an integral hydraulic-powered hoist to an overhead position, thus permitting gravity loading of trucks without the need of excavating a driveway beneath the loading bin.

Capacities of these units range from 225 to 600 tph.

For further information write to the Eagle Iron Works, Dept. C&E, P. O. Box 934, Des Moines, Iowa, or use the Request Card at page 18. Circle No. 27.

Add safety features to rotary compressor

The addition of a number of new features on the Model 125RG2 portable rotary compressor has been announced by the Le Roi Division of the Westinghouse Air Brake Co.

Now included on this 125-cfm, gasoline-driven, 2-stage unit are three safety features.

The first is a cutoff switch that automatically shuts down the compressor if engine-oil pressure drops too low for any reason.

The second is an automatic dump valve that instantly releases air pressure in the receiver when the compressor is shut down. This eliminates the possibility of oil backing up into the air end.

The third is a non-wearing orifice, located in the receiver outlet, that assures proper air-end oil cooling by holding 40 pounds of pressure in the receiver.

For further information write to the Le Roi Division, Westinghouse Air Brake Co., Dept. C&E, 1706 S. 69th St., Milwaukee, Wis., or use the Request Card that is bound in at page 18. Circle No. 77.

WINSLOW—PORTABLE TRUCK SCALE

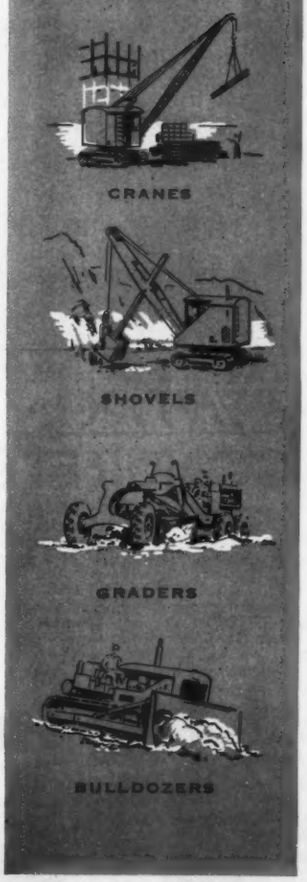
THE CONTRACTORS' SPECIAL SCALE

For use at temporary and permanent locations—at stock piles and by bituminous material contractors at the job site. Capacity: 15-18-20-30, 40 and 50 tons.

Write us for name of your nearest distributor.

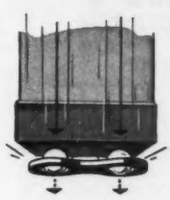
WINSLOW SCALE COMPANY P.O. Box 1198 Terre Haute, Indiana

For more facts, use Request Card at page 18 and circle No. 371



reduces downtime, cuts operating costs for

DIAMOND roller chain *users!*

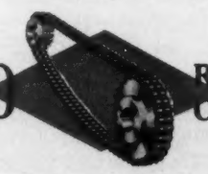


DIAMOND'S patented ball-drifting process eliminates metal "break-out" normally associated with conventional piercing and shaving operations. This provides a micro-smooth pin and bushing hole. The press fit is distributed uniformly over this entire surface and results in greater structural rigidity. With optimum fit between pin, bushing and link plates, resistance to fatigue is improved.

RESULT: stronger, longer-lasting chain . . . snap-back strength under peak shock loads . . . power-driving performance, day in and day out, month after month.

● **END DOWNTIME DELAYS! Your DIAMOND Distributor has all types and sizes of Roller Chain *in stock*, ready for instant delivery. Look under "Chains, Roller" in the Telephone Directory YELLOW PAGES . . . or write to factory for catalog and name of the nearest Distributor.**

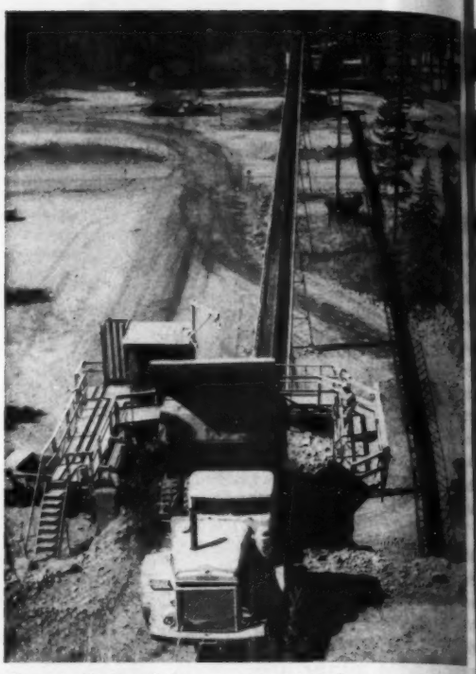
DIAMOND CHAIN COMPANY, INC.
A Subsidiary of American Steel Foundries
DEPT. 487, 402 KENTUCKY AVENUE, INDIANAPOLIS 7, INDIANA
Offices and Distributors in All Principal Cities

DIAMOND  **ROLLER CHAINS** ®

For more facts, use Request Card at page 18 and circle No. 372

(Article on facing page)

The first step to get a million yards of impervious core and blanket material from a hilltop borrow pit to the embankment of Hills Creek Dam near Eugene, Ore., is handled by a Lima 1601 shovel with 4-yard dipper and Euclid end-dumps. The shovel takes about a 20-foot lift to blend materials in the several strata that make up the face.



The second step of the operation takes place at the hillside screening plant. Its hopper easily takes a load of borrow from a Euclid end-dump so there is no delay for the haul units. The conveyor takes the screened material to the loading bins.

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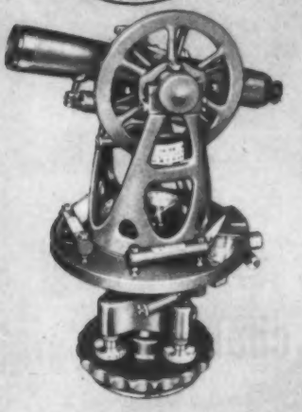

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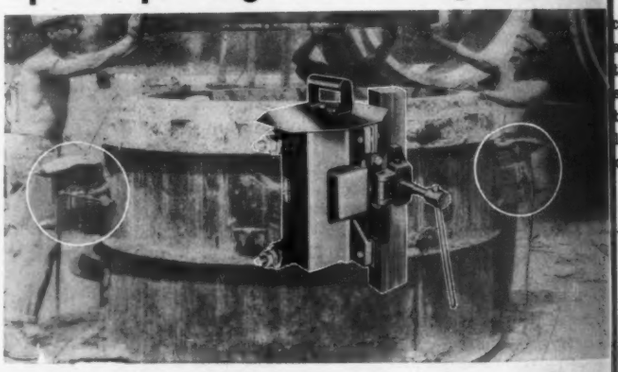

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Long conveyor bridges haul roads at dam

Hills Creek Dam, being built for the Portland District of the U. S. Army Corps of Engineers on the Willamette River near Eugene, Ore., requires nearly 1.5 million cubic yards of material for its impervious core and blankets. Producing about two million cubic yards of this material from a hilltop borrow pit that contained almost 20 per cent oversize was one of the primary problems facing the contractor in the planning stage of the job.

The oversize could have been separated in the pit by a screening device, but haul units would have had to negotiate a considerable grade into the valley and head along the valley floor to the embankment. On this route, they would have crossed a local road and the main access road to the job, and this would have created potentially dangerous intersections.

Instead, the general contractor, a joint venture of Green Construction Co., Des Moines, Iowa, and Tecon Corp., Dallas, Texas, turned the hilltop borrow location to its advantage, breaking the operation down into three phases.

A shovel and trucks ride a practically level haul road from the pit to a separation plant on the hillside. In this plant, a Universal wobble feeder separates the oversize, which goes by gravity directly to trucks, and delivers the core material to a long conveyor leading across local and ac-

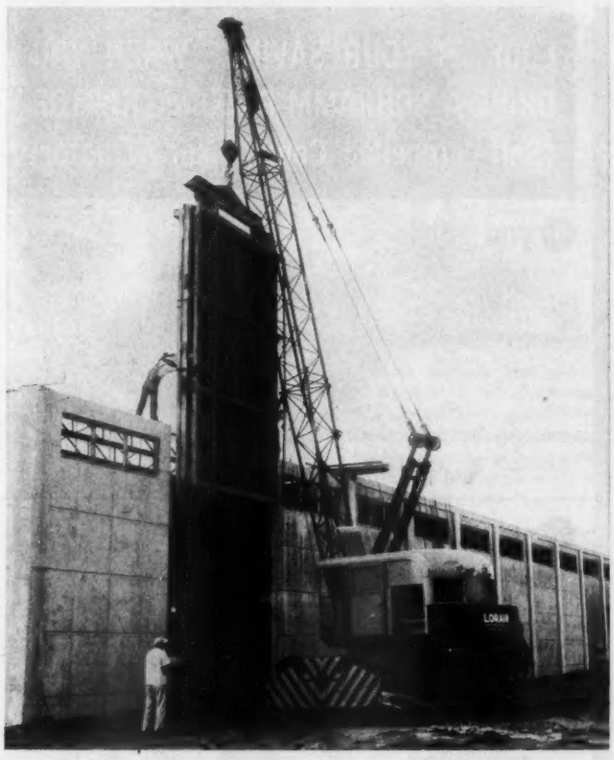
(Continued on next page)

Step three is the loading of DW20 scrapers that have been enlarged and sideboarded to carry 27-yard loads. The loading structure at the end of the 600-foot Conveyco conveyor consists of a 50-yard bin with air gates to control the dumping of the material. The bin has air jets to keep the material moving.

(Additional photos on facing page)

"Tilt-Frame" method used to erect 14 buildings. In a patented process, developed by Garmon Construction Company of Fort Worth, reinforced concrete wall sections are poured into steel frames and put in place less than 24 hours after pouring, cure on the job. Fast, "Power-Set" Outriggers team up perfectly with this fast construction procedure.

Moto-Crane moves up fast as building grows. "Power-Set" Outriggers are partially retracted for ground clearance in 20 seconds. The Moto-Crane moves along for the next lift, and the outriggers are set in another 20 seconds. Maximum capacity and stability for every lift . . . no lost time.



MOTO-CRANE SETS OUTRIGGERS IN 56 SECONDS TO ERECT CONCRETE WALL SECTIONS

"Power-Set"* Outriggers—Lorain's pace-setting development—speed building at Richland Industrial Park in Fort Worth, Texas.

When Gorbett Brothers of Fort Worth, owner of five Lorains, moves in with a 35-ton Lorain Moto-Crane MC-530W to erect reinforced concrete wall sections, the operator can position the "Power-Set" Outriggers in less than a minute. During an 8-hour day this Moto-Crane handles 16 twenty-ton panels. This means many moves a day with a new outrigger set-up each time . . . but it is a breeze with Lorain "Power-Set" Outriggers.

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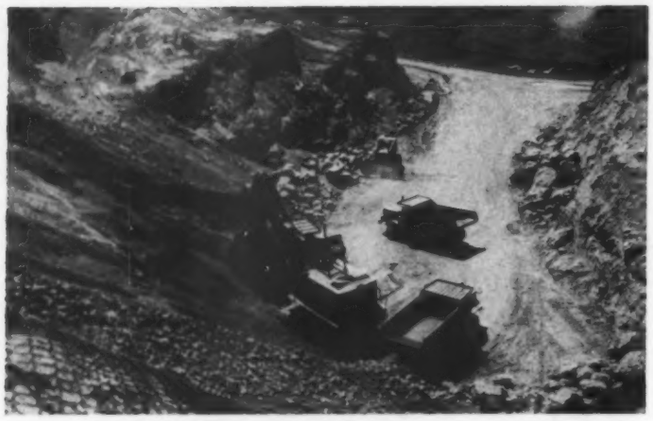

A rock slide near the right abutment wiped out a newly aligned local road and required some redesign, as well as removal of extra material. A Bucyrus-Erie 71-B and "Euc" end-dumps remove the material. Woven-wire fencing prevents rock from falling on crews below.

(Continued from preceding page)

cess roads to a loading plant on the valley floor. Scrapers haul from the loading plant to the embankment.

With relatively few units, and a correspondingly small crew working on two 10-hour shifts, this 3-phase operation produces an average of 5,000 cubic yards of core material and 1,000 cubic yards of oversize rock per day. This is enough to keep pace with the larger spreads that are building the pervious zones of the structure.

Requires some blasting

Because of a highly stratified condition in the borrow pit, it is necessary to work a face at least 20 feet deep, blending the materials as they are loaded. Some of the strata are of a cemented gravel that requires blasting.

Two Gardner-Denver Air Trac drills powered by a Gardner-Denver 900-cfm compressor punch out 3-inch holes to depths of 20 to 30 feet on a 14-foot gridiron plan for the blasting. The holes are loaded with Du Pont ammonium nitrate and one stick of dynamite; this is very effective in breaking up the cemented material.

A Lima Model 1601 shovel with a 4-yard dipper loads the pit-run material into three Euclid end-d... that make the haul to the separa... plant.

Wobble feeder separates

The separation plant is a c... structure built into the hillside ... looking the valley. At the level of t... haul road is a hopper that ... takes the full load from one of t... "Eucs." The hopper has a ... of air jets arranged around the s... to prevent the material from ... ing up in the bin.

The Universal 48-inch wobble feeder is the key unit in the separation plant. It passes all minus 6-inch material to the conveyor for use in the core of the dam, and it shunts rock over to a chute from which it is hauled to the dam.

Immediately below the hopper is a 48-inch Universal wobble feeder that separates the oversize material, passing the minus 6-inch core-zone ma...

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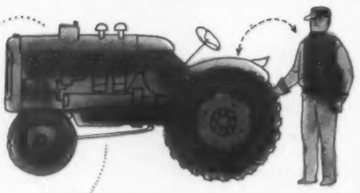

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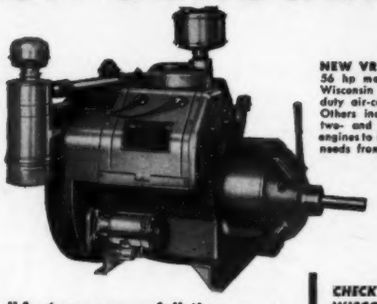

NEW VR4D 4-cylinder 56 hp model tops the Wisconsin line of heavy-duty air-cooled engines. Others include single-, two- and V-type 4 cyl. engines to meet all power needs from 3 to 56 hp.

"plus" features assure full-time power in any climate!

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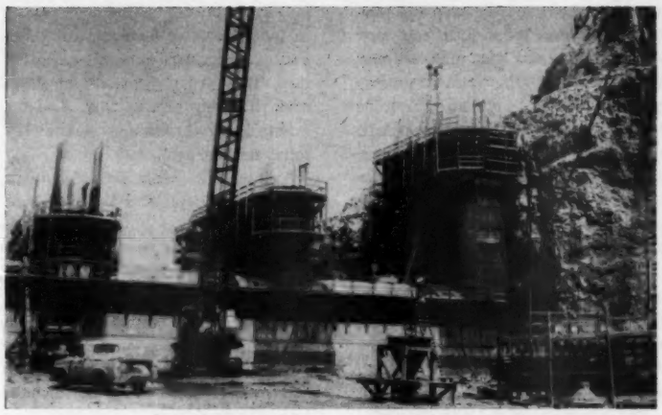
rial to a Conveyco conveyor. This
-inch belt conveyor extends 600
et across the valley to a loading
tructure. The conveyor is carried on
series of high steel bents that leave
re than enough headroom for the
ads that cross under it.

As the oversize rock comes off the
obble feeder, it is discharged into
steep chute leading to the valley
oor immediately below the separa-
ion plant. This chute lies at an angle
f 35 degrees with the horizontal. In
rder to control the flow of the heavy
ocks down the chute, it is equipped
ith a series of heavy swinging baf-
es. These baffles absorb some of the
nergy of the falling rock, keeping it

(Continued on next page)



A Bucyrus-Erie 54-B crane with 120-foot boom handles concrete placement for the spillway structure. Piers of the gated section of the spillway are being formed.

Nearing completion is the 21-story East Ohio Building in Cleveland. This modern skyscraper is strengthened with 2300 tons of reinforcing steel—all tied with Cal-Tie Wire.

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Tri-State Steel Construction, Inc. of Cleveland was the reinforcing steel erector of this new office building. To help get the job done in the record time of five months, Tri-State workmen carried re-bar tie wire the safe way—the Cal-Tie Wire Way.

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(Continued from preceding page)

at a controllable speed.

A gate at the bottom of the chute holds the rock when there is no truck in position. Ordinarily two Euclid end-dumps or International Payhaulers load this rock and haul it to a rock-fill area of the dam embankment. When a substantial amount has been accumulated at the bottom of the chute, the next truck gets a full load of rock almost instantaneously, and with a clatter which resounds up and down the valley.

Scrapers haul to dam

The core-zone material falls from the end of the long conveyor into a 50-yard surge bin. This bin is fitted with air jets that help keep the material flowing. It is also equipped with water jets so that moisture can be added to the material when required. However, the material from the borrow pit contained more than the optimum amount of water during most of the operation, and the water jets have never been used.

A spread of four Cat DW20 scrapers load by gravity from the surge bin and haul to the dam embankment. These scrapers have all been enlarged to carry 27-yard loads. When necessary, a Euclid bottom-dump works with the scrapers to maintain a steady flow of material.

The scrapers spread the core material in 8-inch loose lifts that are compacted by D8 and D9 tractors running over them. This zone is not rolled with sheepsfoot or heavy rubber-tire rollers.

Building gravel zone

On either side of the impervious central core is a large gravel zone that actually accounts for about 80 per cent of the volume of the dam structure. Most of this material comes from upstream borrow areas. It is loaded by big draglines and hauled primarily by a spread of Euclid bottom-dumps.

The gravel is placed in 18-inch lifts and is compacted by a combination of D8 and D9 tractors pulling Ferguson or Bros 50-ton rubber-tire compactors.

Some other zones consist of rock fills, with material obtained from the spillway excavation and from a rock quarry on the left abutment. This rock was drilled and blasted, loaded by shovels, and hauled to the structure in end-dump haul units.

Dam is multipurpose

The $45 million Hills Creek Project is one unit of a comprehensive plan to develop and use the water resources of the Willamette Basin in the interest of flood control, navigation, irrigation, power, and other uses. This key project will be operated in conjunction with Lookout Point Reservoir, which lies a few miles downstream.

The main embankment of the dam is 1,920 feet long and 346 feet high. Its average width at the toe is 1,400 feet. Since the material in the vicinity of the left abutment is almost entirely fractured rock that goes down as much as 200 feet, an impervious blanket was laid over this area to eliminate seepage. The downstream side of the area is carefully drained into a tunnel that discharges below the structure. The dam contains more than 11 million cubic yards of material.

The spillway, which is curved ... of the rock mountain on the ... abutment is, with the regulating ... let at full capacity, designed to ... maximum design flood of 151,000 ... The gated-chute spillway ... three tainter gates, each 42 feet ... and 48.2 feet high.

The intake structure serves ... for regulated drawdown of the ... voir and for power production. ... 6.5×12.5-foot intakes lead to ... regulating outlet tunnel, which ... trates the mountain behind the ... abutment. A 9.5×12-foot intake ... to the 12-foot power penstock, ... makes a wye as it enters the ... house at the base of the right ... ment.

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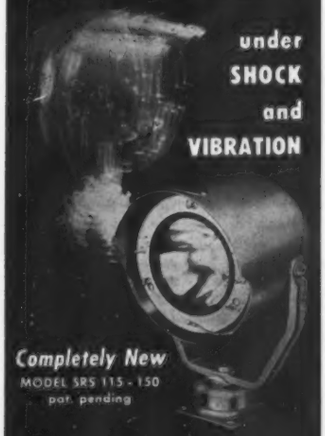

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Rock slide

Above the spillway excavation, on ...e right abutment, a bench was ...ated out of the side of the moun... tain to carry the new alignment of a local road serving a portion of the area on the east side of the reservoir. Before the excavation had been completed, a huge rock slide took out a section of this road. The material slid down into the area immediately upstream from the spillway, and much of it had to be removed.

This necessitated a change in the plans, increasing the volume of rock excavation and requiring the contractor to move back up the mountainside to carve out a new alignment for the road.

Concrete construction

The spillway, outlet, and power facilities required the placement of some 55,000 cubic yards of concrete. To produce the mix, Green-Tecon set up a Johnson concrete plant with two Koehring 2-yard tilt mixers. Four Ford F-700 trucks, each carrying two Gar-Bro 2-yard concrete buckets, hauled the mix from the plant to the dam. Much of the concrete was placed in the structure by a Bucyrus-Erie 54-B crane that handled the 2-yard buckets on a 120-foot boom.

When portions of the spillway chute were being constructed, the concrete was dumped over the spillway crest and down the other side by a Rex 200 double Pumpcrete.

Maintenance

Daily field maintenance and lubrication of the equipment were provided by a crew using a specially equipped Ford F-800 lube rig. The seven Alemite reels and pumps on the rig provided oils, greases, torque-converter fluid, as well as air from five 110-gallon tanks on the truck. D-A lubricants and torque-converter fluids were used exclusively; the oil and fuels were supplied by the Union Oil Co.

Tire maintenance was handled under a contract with Rogers Tire Co., the U. S. Tire Co. distributor in Portland. Rogers kept a rig on hand at all times to handle the big tires.

All of the rubber-tire equipment was lubricated and serviced each night during the shutdown period. Only the tractors were stopped for servicing during working hours.

The Green-Tecon supervisory staff is headed by project manager T. C. "Chal" Beard. Others on the staff are job superintendent Joe Wheeler and office manager Gerald Olson.

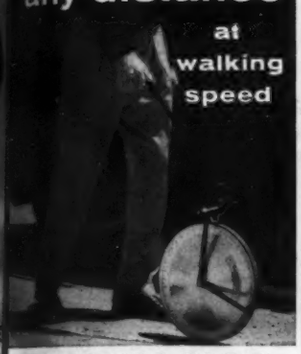
(*Continued on page 141*)

Equipment list

The spread assembly by Green-Tecon for this project includes:

16 Cat D8 and D9 tractors
7 Cat DW20 scrapers (extended to 27 cu. yds.)
17 Euclid bottom-dumps
10 Euclid end-dumps
5 International Payhaulers
4 Cat 12 motor graders
1 Michigan 275 tractor shovel
1 Bucyrus-Erie 51-B shovel
1 Bucyrus-Erie 54-B crane
1 Bucyrus-Erie 71-B shovel
1 Bucyrus-Erie 88-B dragline
1 Marion 111-M dragline
1 Manitowoc 4500 dragline
1 Lima 1601 shovel
1 Lorain MC-524 motor crane
6 Gardner-Denver Air Tracs
2 Gardner-Denver 1,000-cfm electric compressors
1 Gardner-Denver 900-cfm portable compressor
1 Gardner-Denver 600-cfm portable compressor
3 Ferguson and Bros 50-ton rubber-tire compactors

Measure any distance at walking speed



records 100,000 ft. automatically!

It's So Easy to measure with a Rolatape ...and you save time on every estimating job...no tapes to wind, no helper is required. You get precision-accurate measurements every time.

Records Feet automatically and the accumulated total is always in full view.

Shows Inches, and Fractions of an inch. Wheel is calibrated in inches and fractions for quick easy reading.

Shows Tenths of a foot. Wheel is calibrated in tenths on reverse side for engineers.

There is a variety of Rolatape Models to suit your needs. See them at your local dealers.

Write for information and name of local dealer today!

Rolatape, Inc., 1741 14th St., Santa Monica 2, California

Rolatape
Measuring Wheels

For more facts, circle No. 383

NEW! EFCO BRIDGE COLUMN FORMS

EFCO Bridge Column Forms used on New Orleans overpass save time and labor. Precision construction permits quick, easy stripping as shown. Adaptable to a wide range of uses. Ideal for forming pier nosings when combined with regular EFCO Forms.

MAIL COUPON TODAY

Economy Forms Corp.
Box 128-E
H. P. Station
Des Moines, Iowa

Please send information on EFCO Bridge Column Forms, and address of nearest sales office.

Name.....
Firm name.....
Address.....
City.....State.....

For more facts, use coupon or circle No. 384

RUGGED AND RIGHT FOR YEAR 'ROUND WORK *in really cold weather!*

MARION BODIES AND HOISTS MARION

Heated Floors Allow Landers & Griffin, Inc. To Keep Working All Year On Route 93 in New Hampshire.

Six Marion units with heated floors from the truck exhaust have made it possible for one contractor to keep going all year in the really cold White Mountain region.

Another six units owned by the contractor but with unheated floors are also on-the-job. All twelve have Model MFR bodies with a capacity of 11 to 12.3 yards. Marion hoists are twin underbody arm type Model HD-88.

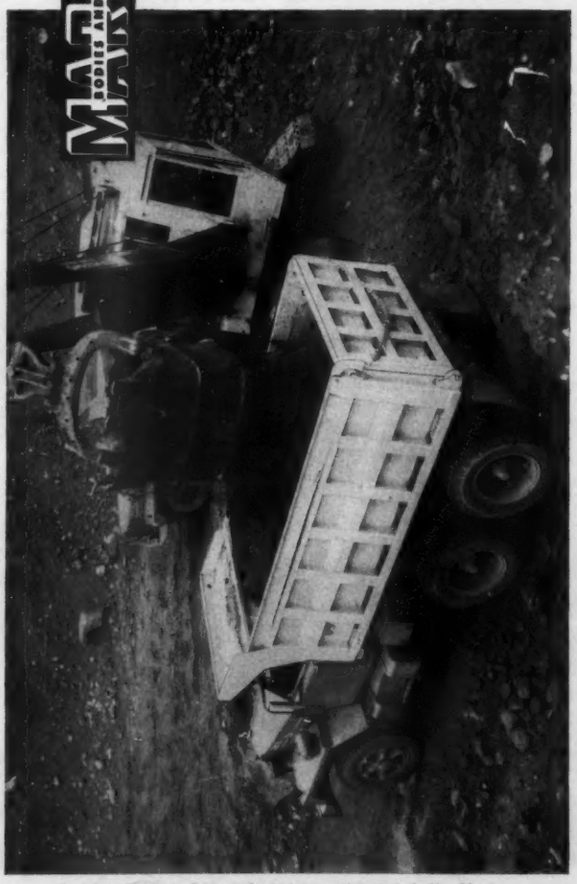
Payload performance on the six with heated floors averages 1800 yards per 11-hour shift, traveling both uphill when loaded and in heavy traffic.

The prime contractors, Landers & Griffin, Inc., jointly sponsored with Morrison-Knudsen Co., are building 4.05 miles of Route 93 at an estimated cost of $2.7 million.

Ed Graves, Equipment Supt., says, "We like Marion bodies and hoists very much. We have used Marions for a long time and will continue to do so. The service provided by Marion's Distributor is beyond compare."

If you want to keep going and ahead of schedule, why not see your Marion Distributor or write direct for profit facts.

MARION METAL PRODUCTS CO.
Marion, Ohio, U.S.A.



For more facts, use Request Card at page 18 and circle No. 385

Construction Camera

Rock excavation is way ahead of schedule for the Lewis Smith Dam on the Sipsey Fork of Warrior River in Alabama. The job is being done for the Alabama Power Co. by a joint venture. The self-propelled drill is using Varel Air Blast 9⅞-inch bits; loading is being handled by Marion and P&H shovels.

Plenty of special jobs—bringing up grades, picking up and spreading drowed material, and cutting streets—are handled by a LeTourneau-Westinghouse Model D Tournapull with D scraper at one of the seven highway projects being built by Ervin Construction Co., Inc., Charlotte, N. C.

EAGLE PORTABLE SAND WASHING SECTIONS GO ALL OVER FOR HIGHWAY CONTRACTOR

Eagle Portable Sand Washing - Classifying - Dehydrating Sections not only go all over, but they go all out to produce specification material for highway and public works projects. Pulled from job to job by tractor truck, they can be quickly set up next to screening unit. Compact, self-contained, automatic, centralized controls. Water connection easily made. The two "gadabout" Eagle Portable Units shown are owned by Hallett Construction Co., Crosby, Minn. — one shown producing material for North Dakota interstate highway 94 and the other for Iowa interstate highway 80. Many aggregate producers and contractors are profiting from ownership of one or more of these Eagle Portables — send for Catalog 58. Eagle Iron Works 159 Holcomb Ave., Des Moines, Iowa.

SINCE 1872

Factory-Trained Distributors Everywhere!

EIW
EAGLE IRON WORKS

For more facts, use Request Card at page 18 and circle No. 386

TWO MORE CONTRACTORS PROFIT FROM DOTMAR

CURB & GUTTER PAVERS

Schuster Construction Co., Green Bay, Wisc., cuts costs with a Dotmar, paving median strip curbing on U.S. 41 near Neenah, Wisc. at better than 300 ft. per hour. Machine does not hold up ready-mix trucks. Makes curb or gutter of any shape—sidewalks too, highway median strips and city street widening with curb to 6 ft. wide.

M. G. Monte Contracting Co., Mt. Clemens, Mich., keeps ahead of schedule paving curb and gutter on Detroit Expressways and State Highway projects. Dotmars quickly return their cost.

Send for literature!

MAKERS OF MAGNALITE MAGNESIUM ALLOY PAVING FORMS

Dotmar INDUSTRIES Inc.

519 Hanselman Bldg., Kalamazoo, Mich.

For more facts, use Request Card at page 18 and circle No. 387

ALL NEW!

GOOD ROADS "ODELL" SPREADER

...for asphalt and aggregate spreads up to 8-inch depths

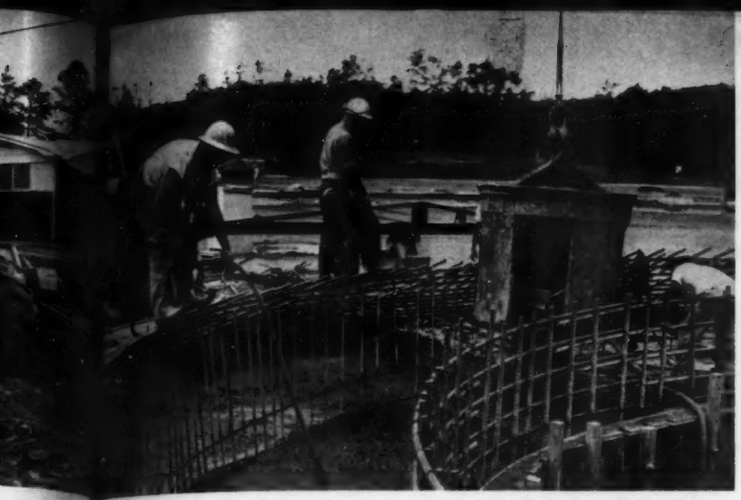
Operated by only two men, contractors report savings up to 50% on average jobs with the "Odell". Spreads asphalt, gravel, coarse slag or stone, limestone, cinders, and other base material (up to 4" in diameter) to 8" in depth. Adjustable for spread widths up to 10 feet.

Accurate spread depth is controlled by the exclusive "floating" strike-off bar with new crown adjustment, mounted on runners independent of the roller and hopper.

Can be hitched to practically any standard size or model dump truck in seconds. For further information write:

Good Roads
GOOD ROADS MACHINERY Corp.
MINERVA, OHIO

For more facts, use Request Card at page 18 and circle No. 388



...ead start on the "Big Dish," the world's largest steerable radio telescope, Sugar ...ve, W. Va., is made with concrete placement for the heavily reinforced support for ...ntle bearing that will absorb side thrusts from wind pressures. The parabolic an... ...na, scheduled for 1962 completion, will have a diameter greater than the height of the Washington Monument—600 feet—and a surface area of about 7.1 acres. The American Bridge Division is erecting two temporary towers, above, for work on the dish. Towers, 90 feet square, will rise to a height of 420 feet and will be surmounted by derricks with 200-foot-long booms.

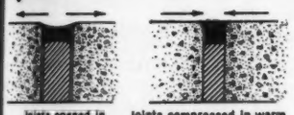
SERVICISED

JOINT SEALERS

for Maximum Paving Joint Protection

HOT POURED

Para-Plastic®



Joints opened in sub-zero temperatures

Joints compressed in warm weather temperatures

Hot-Poured Para-Plastic is an effective joint sealer consisting of a rubberized asphalt compound that forms a tough, resilient, adhesive, and waterproof seal, which will maintain bond at sub-zero temperatures. Para-Plastic is unaffected by temperature extremes and insures a moisture-tight seal of expansion, contraction and dummy joints in concrete pavement of all types. Millions of pounds of Para-Plastic have been installed on Air Force, Navy and civilian air fields, State Highways and similar projects.

COLD APPLIED

ZERO-LASTIC®

Here is a cold-applied ready-mixed rubberized asphalt sealing compound designed for sealing horizontal expansion, contraction and dummy joints to prevent infiltration of moisture and foreign material in concrete pavement of highways, airports and other concrete construction. Widely used for new construction as well as maintenance. For relatively small jobs Zero-Lastic can be economically applied with a caulking gun.

BONDTITE

A highly effective, two-component, cold applied Joint Sealing Compound specifically developed for use on Airport pavements open to Jet Traffic. Bondtite is extremely resistant to chemicals, solvents and jet fuels, and provides excellent adhesive and bonding properties to both new and old concrete. Bondtite is not affected by extreme temperature variation and the pavement can usually be opened to traffic one hour after application, depending upon temperature.

For more information on these products and others, write today for the SERVICISED Products Catalog.

SERVICISED PRODUCTS CORPORATION

6051 West 65th Street · Chicago 38, Illinois

For more facts, circle No. 389

(*Continued from page 139*)

The foreman of the crew producing the core material is Harold Baker.

The Portland District of the U. S. Army Corps of Engineers on the work is represented by resident engineer Phillip L. Cole, assistant resident engineer Tom G. Waring, and soils technician Harry Bernard. The district engineer for the Portland District is Col. Walter L. Winegar.

THE END

Worthington appoints

■ Aloysius M. Tullo has been named group vice president of Worthington Corp., Harrison, N. J., replacing Elston J. Tribble, who resigned. William A. Finn has been promoted to general manager of the Harrison Division, and Frederick B. Seel is to hold the same post at the company's Holyoke Division in Holyoke, Mass.

McKISSICK BUILDS A BETTER BLOCK FOR EVERY PURPOSE

DELUXE SERIES CRANE BLOCKS OFFER THESE SUPERIOR FEATURES

- Completely shrouded sheaves with no sacrifice in length.
- Completely streamlined exterior—All pins countersunk, eliminating projections.
- Complete range of sheave, sizes, capacities and weights.

McKISSICK

McKISSICK PRODUCTS CORPORATION

Box 2496 Tulsa, Oklahoma

For more facts, use Request Card at page 18 and circle No. 390

HERE'S HOW YOU CAN GET MORE DITCH PER DOLLAR!

Photos above show the versatile Vermeer 4T POW-R-DITCHER digging a gas main trench. Manufactured for the light construction field, this small, inexpensive ditcher is excellent for water and cable lines and home foundation footings.

RUGGED, LOW COST 4T

POW-R-DITCHER

DIGS 6"-14" WIDE DOWN TO 4½' DEEP

The small powerful, ruggedly built Vermeer 4T POW-R-DITCHER is designed especially for contractors, municipalities, utilities, institutions and custom operators. Only 46" wide, the 4T is fast . . . and highly maneuverable. One-man operated, the POW-R-DITCHER is self-propelled, has two-way dirt conveyor and hydraulic track drive. Handles most ditching jobs at a fraction of the cost of more expensive ditching machinery.

IDEAL FOR LAYING GAS PIPE, WATER AND CABLE LINES AND FOR HOME FOUNDATION FOOTINGS

The 4T POW-R-DITCHER is the finest buy on the market when you want a low cost investment, low maintenance cost and high production. Capable of handling most ditching jobs, the 4T is a real workhorse!

Please send me FREE information and prices on the complete line of self-propelled Vermeer POW-R-DITCHERS.

NAME _____

TITLE OR DEPT. _____

FIRM _____

ADDRESS _____

CITY _____ STATE _____

VERMEER MFG. CO.

1437 W. WASHINGTON, PELLA, IOWA

For more facts, use coupon or circle No. 391

Product LITERATURE

To obtain free copies of any of the literature described in the following section, circle the designated number on the Request Card at page 18.

Crane outrigger—a bulletin describing the new hydraulically operated Power-Set outriggers available on Lorain-Moto-Cranes. Includes information on how Moto-Cranes go from travel to ready-to-work position in 56 seconds, make quick move-ups in 20 seconds. Other features covered are adjustments for crowded quarters or uneven ground, and individual controls for each outrigger beam.

Write to The Thew Shovel Co., Advertising Dept., Dept. C&E, 28th and Fulton Road, Lorain, Ohio, or use the Request Card at page 18. Circle No. 95.

Pipelayers—an illustrated booklet on Caterpillar No. 583, No. 572, MD7, and MD6 pipelayers. Covers such features as turbochargers, lifetime-lubricated track rollers and idlers, and dry-type air cleaners. Form No. D926.

Write to the Caterpillar Tractor Co., Dept. C&E, Peoria, Ill., or use the card at page 18. Circle No. 96.

Space heater—a fact sheet on the John Wood Model PH-120 space heater. Lists such features as elimination of vent and dangerous fumes, automatic constant ignition, and automatic operation with optional extra controls. Gives specifications, and is illustrated with drawings and photographs.

Write to the John Wood Co., Heater & Tank Division, Dept. C&E, Conshohocken, Pa., or use the Request Card at page 18. Circle No. 97.

Concrete treating—literature detailing the characteristics and benefits of Concut C.I.P. 18-26 chlorinated rubber treatment, said to cure, seal and harden concrete in one application. According to the manufacturer, the film left by this treatment protects new surfaces from rainfall damage within 15 to 20 minutes after application. Drawings illustrate text.

Write to Concut Industrial Products, division of Concut Sales, Inc., Dept. C&E, 1845 Belcroft Ave., Monte, Calif., or use the Request Card at page 18. Circle No. 98.

Bin-level control—a bulletin on Tellevel bin-level control switches. Features comprehensive technical data, specifications, diagrams, and illustrations on the normal-duty explosion-proof and heavy-duty types. Bulletin 159.

Write to the Stephens-Adamson Mfg. Co., Dept. C&E, 275 Ridge Ave., Aurora, Ill., or use the Request Card at page 18. Circle No. 99.

Crawler-excavator—a catalog on the Bay City Series 40 ¾-yd. crawler-excavator convertible to crane, dragline, clamshell, shovel, or hoe. Detailed photos of the machine parts and assemblies are shown in the pictures, and there is a 2-page spread of 23 job photos.

Write to Bay City Shovels, Inc., Dept. C&E, 2611 Center St., Bay City, Mich., or use the Request Card at page 18. Circle No. 100.

Rear dump trailer—a bulletin describing the Easton Model TS-22 rear-dump variable-wheelbase trailer designed for use with the Euclid Model 30 LOT single-axle tractor. Complete specifications. Illustrated with photos and a performance chart. Bulletin No. 2-A8.

Write to the Easton Car & Construction Co., Dept. C&E, Easton, Pa., or use the Request Card at page 18. Circle No. 101.

Core drill—a folder describing and illustrating the Acker Presidente core drill. The unit is designed for either truck or skid mounting and offers such features as air-operated chain feeding and air-operated hoist with overrunning clutch and brake. In addition to handling coring and soil sampling tools, this machine will handle conventional flight augers as well. Bulletin No. 31.

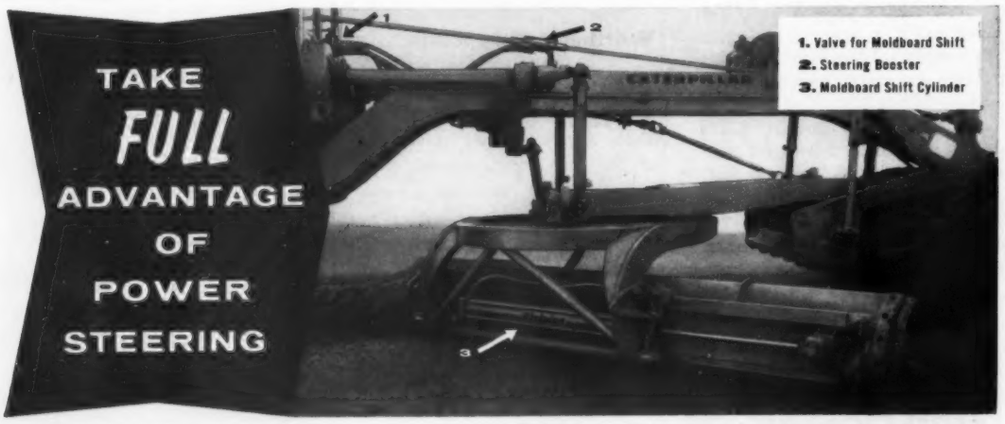
Write to the Acker Drill Co., Inc., Dept. C&E, P. O. Box 830, Scranton, Pa., or use the Request Card at page 18. Circle No. 102.

Wire-rope fittings, accessories—a bulletin on Farrell-Cheek wire-rope fittings and accessories including snatch block sockets, standard and improved wedge sockets, chain hooks, and others. Illustrated with photographs. Catalog No. 22.

Write to the Farrell-Cheek Steel Co., Dept. C&E, First St., Sandusky, Ohio, or use the Request Card at page 18. Circle No. 103.

Scaffolding, shoring—a folder describing Superior tubular steel scaffolding setups for concrete construction and shoring jobs. In the shoring section, explains the systems of multiple bracing as well as the standard and basket-weave bracing method said to increase carrying capacity of the scaffold by at least 15 per cent. Also includes a chart showing the frame spacings possible with various Auto-Lock crosses, and data on selection of bracing.

Write to the Superior Scaffold Co., Dept. C&E, 5624 Bankfield Ave., Culver City, Calif., or use the Request Card at page 18. Circle No. 104.



--equip your Cat Motor Graders with **Rivinius** Hydraulic Moldboard Shift

Whether your Cat Motor Grader has Rivinius or another type of power steering, you can use the same hydraulic system to control the moldboard. The Rivinius Hydraulic Moldboard Shift is low cost—and earns more profit by cutting down job time and operator fatigue. At the same time quality goes up!

- Fast, accurate moldboard control from inside the cab
- Fits any Cat Motor Grader with sliding moldboard
- Operates off same pump as Rivinius or other hydraulic power steering
- Shifts at the touch of a hand—correct position for every application
- Moldboard stops and locks in any position operator wishes
- Functions whether grader is moving or stationary
- Moves through full distance of travel in less than 20 seconds

ALSO: a Rivinius Torque Steering Booster fits on steering shaft of any Cat Motor Grader...provides easy wheel-turning, holds grader from drifting and frees operator's hands for other controls. Booster and Moldboard Shift operate from same hydraulic pump ...both can be installed for less than $575.

SEE YOUR CATERPILLAR DEALER NOW...OR WRITE:

Rivinius, inc. EUREKA, ILLINOIS

For more facts, use Request Card at page 18 and circle No. 392

HARBORMASTER MARINE TRACTOR

. . . work horse of the waterways

If you need easily installed power, better steering control, safety in shallow water, easier maintenance, more efficient performance, simpler hull design, more cargo space or simplified crew operation . . . you should investigate Harbormaster Outboard Propulsion and Steering. Harbormaster is a *complete* power and steering package . . . powerful, highly maneuverable, economical to operate and maintain.

See for yourself what Harbormaster Marine Tractors can do. Send for big illustrated Catalog. If you have a requirement, our Marine Architect will make recommendations without obligation.

MURRAY & TREGURTHA, INC.
44 Hancock St., Quincy 71, Massachusetts

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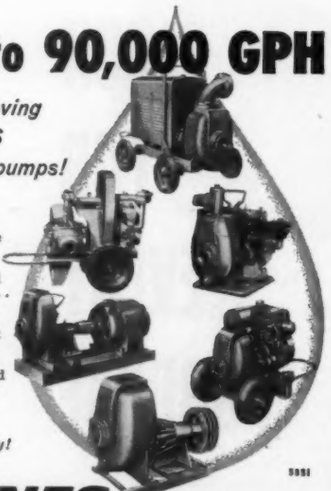
4000 to 90,000 GPH

Keep jobs moving with BARNES construction pumps!



27 Self-Priming Centrifugal Pumps engineered to move more water faster on excavating, mining and general construction jobs . . . prime and reprime without fail even during intermittent service. Portable Diaphragm models to handle semi-solid seepage faster, too. All constructed and pre-tested to give you Barnes *Blue Ribbon Quality!*

BARNES

Barnes Manufacturing Co.
Mansfield, Ohio

Get a FREE copy of our Construction Pump Selector No. 238 from any Barnes distributor.

For more facts, circle No. 394

Electric hammer—a folder on a new Porter-Cable Kango electric hammer available in three models with operating ranges from 3/16 inch to 3 inches. Data on star drills and accessories. Action photos emphasize the tool's versatility.

Write to the Porter-Cable Machine Co., Dept. C&E, 700 Marcellus St., Syracuse, N.Y., or use the Request Card at page 18. Circle No. 105.

Weight charts—weight distribution charts for easy predetermining of the payload capabilities of any given concrete mixer-truck combination. Shows weight distribution of 4, 5, 6, and 7-cubic-yard Hercules Galion Separatengine mixers, the 6-cubic Automatic F.E.P.T.O. mixers, and the 4-cubic-yard Hercules Galion 4-cubic-yard mixer.

Write to the Transit Mixer Division, Hercules Galion Products, Inc., Dept. C&E, Galion, Ohio, or use the Request Card at page 18. Circle No. 106.

Welding equipment—a catalog describing the Heliarc line of manual welding equipment. Accessories available for each torch are described, and are also listed separately in handy table form. Complete ordering information is included.

Write to the Linde Co., Division of Union Carbide Corp., Dept. C&E, 420 Lexington Ave., New York 17, N. Y., or use the Request Card at page 18. Circle No. 107.

Post-tensioning system—a folder explaining the advantages of prestressed poured-in-place concrete tensioned by The Prescon System of post-tensioning. Illustrations include various examples of buildings under construction, plus detailing of tendon and transverse slab steel in place on a job using plywood forms.

Write to The Prescon Corp., Dept. C&E, P. O. Box 4186, Corpus Christi, Texas, or use the Request Card at page 18. Circle No. 108.

Space heater—illustrated literature describing the Electronics Inc. Model 700 self-contained portable space heater offering up to 300,000 Btu of heat. Gives brief specifications.

Write to Electronics Inc., Dept. C&E, P. O. Box 150, Vermillion S. Dak., or use the Request Card at page 18. Circle No. 31.

Two-way radio—a bulletin on GE's new line of 2-way radio equipment. Describes how small size (8½ inches wide, 12 inches long, 4 inches high) makes possible a wide variety of positions in which the equipment may be mounted in cars and trucks. Also includes charts showing how the car's battery can be saved due to the low power required. Bulletin ECR 666.

Write to General Electric, Communications Products Department, Dept. C&E, Lynchburg, Va., or use the Request Card at page 18. Circle No. 109.

Floodlighting—a bulletin on area floodlighting including that of construction sites. Gives quick reference guides for selecting incandescent or mercury floodlights, general purpose or heavy-duty types, and for determining how many floodlights are needed based on the size of the area to be lighted. Includes footcandle charts and installation diagrams, along with listings of floodlights and mounting accessories. Bulletin No. 2719.

Write to the Crouse-Hinds Co., Dept. C&E, Syracuse 1, N. Y., or use the Request Card at page 18. Circle No. 110.

Traffic line markers—a brochure on M-B traffic line markers. Covers various types including truck-mounted, self-propelled, and hand-propelled units, with detailed descriptions and specifications for each. Text illustrated with photographs.

Write to the M-B Corp., Dept. C&E, New Holstein, Wis., or use the Request Card that is bound in at page 18. Circle No. 111.

Iron castings—a folder describing Brillion Iron Works' production facilities for construction castings. Text illustrated with photographs.

Write to the Brillion Iron Works, Inc., Dept. C&E, Brillion, Wis., or use the Request Card at page 18. Circle No. 112.

Paint-protective compound—literature on the benefits of Glaize, a spray-on paint-protective compound for concrete trucks and other road equipment. Glaize is said to be unaffected by hot or cold water, and resists dilute acids, alkalies, and most solvents.

Write to Forrer's Products for Masonry, Division of the Spray-O-Bond Co., Dept. C&E, 2225 N. Humboldt Ave., Milwaukee 12, Wis., or use the card at page 18. Circle No. 113.

Copying machines—a convenient slide-rule comparator, listing complete details on office-copying machines made by ten different manufacturers. Contains information on machine and paper costs, types of copying processes, number of copies possible per minute, and number of processing steps as well as details on nine other categories.

Write to the Minnesota Mining & Mfg. Co., Dept. C&E, 900 Bush Ave.,

OVERMAN
STONE AND ASPHALT SPREADER
A BIG-JOB PAVER AT A SMALL-JOB COST

You can do fast, high-quality paving with this small, compact, low cost machine. Lays any type commercial asphalt. Easily handled on small jobs, highly efficient on the largest job. A proven money-maker for contractors and highway departments everywhere.

GET THE FACTS . . . WRITE FOR DESCRIPTIVE BULLETIN TODAY

I. J. OVERMAN MANUFACTURING CO.
BOX 896 MARION, INDIANA

For more facts, use Request Card at page 18 and circle No. 395

"ON THE JOB WHEN YOU WANT THEM!"

SYLGAB
STEEL and WIRE ACCESSORIES for Fast
FIREPROOFING
of Structural Steel

RIGID BEAM CLIP
5' lengths
— installed with lightning speed.
Made of #12 or #10 gauge galvanized.

★

HAUNCH STIFFENER
for beams over 16" deep. Made of #10 or #12 gauge galvanized wire.

★

TOGGLE HANGERS
More rigid than any wire. Used in conjunction with
SYLGAB SNAP-ON HAIRPIN CLIP
to tie main and cross furring together.

★

Sylgab Steel & Wire Accessories conform to the specifications of the Concrete Reinforcing Steel Institute.

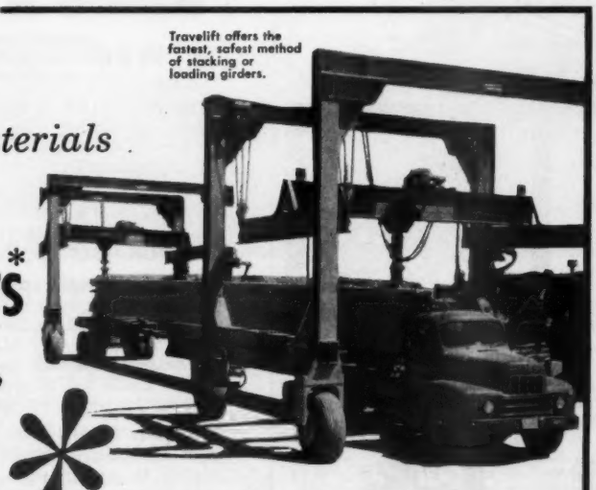
Quality — Service
Ease of Installation

SYLGAB
STEEL & WIRE CORP.
79-05 Cooper Ave., B'klyn 27, N. Y.

BEAM CLIPS • SPECIAL COLUMN CLIPS
EXPANSIBLE CLIPS
STRAIGHT AND COIL WIRE
HAIRPIN CLIPS • TOGGLE HANGERS
FORM SPACERS • BAR ACCESSORIES
Request Catalog—Phone or Wire Collect

For more facts, circle No. 397

...THIS
is the modern way materials handling problems are solved in
PRESTRESSED PLANTS*
Travelift



Travelift offers the fastest, safest method of stacking or loading girders.

This free-traveling vertical lift carrier steps up the entire pace of your operations. Use Travelift to pull strand, set forms, pour forms, clear beds, store finished beams. *Four small levers control entire operation!* Steering, lifting and propulsion of the *Self-Propelled* Travelift are by hydraulics. Available in 6 models with Capacities of 7, 12 and 25 tons or can be custom built to meet your requirements.

TRAVELIFT & ENGINEERING, INC.
Dept. CE, Sturgeon Bay, Wisconsin

☐ Please send information on the SELF-PROPELLED TRAVELIFT

NAME_____
ADDRESS_____
CITY_____ STATE_____

For more facts, use Request Card at page 18 and circle No. 396

Use the Request Card at page 18 to obtain any of this literature.

(Continued from preceding page)

Concrete saws—a brochure on Eveready concrete saws and blades. Points out many of the uses for concrete saws, and discusses horsepower requirements for various applications. Photographs, drawings, specifications included.

Write to the Eveready BrikSaw Co., Dept. 549, Dept. C&E, 1104 Union Ave., Kansas City 1, Mo., or use the card at page 18. Circle No. 115.

Waterstops—a brochure describing the properties and benefits of Durajoint PVC waterstops. Provides cross-section drawings, specifications, and application details of the complete range of sizes and types available.

Write to Electrovert, Inc., Dept. C&E, 124 E. 40th St., New York N. Y., or use the Request Card at page 18. Circle No. 116.

Batching plants—literature containing complete descriptions for the full Heltzel line of bolted-type cement-batching plants designed for virtually every cement-batching and unloading application.

Write to the Heltzel Steel Form & Iron Co., Dept. C&E, Warren, Ohio, or use the Request Card at page 18. Circle No. 13.

Hand-chain hoists—a booklet listing standard specifications for hand-chain hoists. Contains tables and recommended minimum standards on differential, worm-geared and spur-geared (or equivalent) types of hand-chain hoists; hook or lug

(Continued on page 14

NEW-BURCH Dump Body Mounted SPREADER

A unique development in box-type spreaders

All operations are controlled by driver in the cab. He raises or lowers the spinner for variable widths of spread, and controls the volume flow of materials.

Spreads full width or half width on either side.

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The BURCH Corporation
MANUFACTURERS OF EQUIPMENT FOR CONSTRUCTION AND MAINTENANCE OF ROADS AND STREETS
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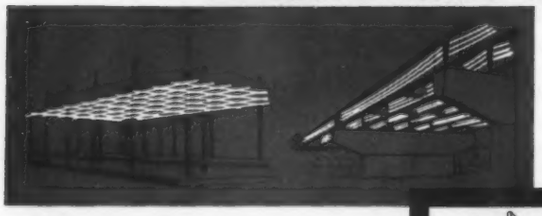
PATTERNS OF TOMORROW TODAY



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FOR THE ARCHITECT AND CONSULTING ENGINEER it means assistance with design and engineering when needed; and assurance that Prescon can be specified with confidence.

FOR THE OWNER it means graceful, functional construction with maximum space utilization, and long spans with minimum material usage.

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ON ROAD WORK—

Tamping fill around 4 ft. concrete pipe culvert on New York State Thruway Extension near Seneca, N.Y. The Barco Rammers are owned by S. J. Groves & Sons Co., Syracuse, N.Y. (Photo: CONSTRUCTION

Barco Rammers are Essential!

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For every piece of equipment that moves during work, trucks, front-end loaders, ready-mixers, graders, etc., bolt on a tamperproof Servis Recorder and it will accurately chart busy time and all stops or delays.

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(See phone book yellow pages "Lubricating Devices," for Graco Suppliers)

For more facts, use Request Card at page 18 and circle No. 402

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says: BAUER-SMITH DREDGING CO. of Port Lavaca, Texas

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For more facts, circle No. 403

(Continued from page 144)

pension; and plain or geared trolley. Booklet HMA-200.

Write to the Hoist Manufacturers Association, Inc., Dept. C&E, One Thomas Circle, Washington 5, D. C., or use the Request Card at page 18. Circle No. 117.

Sandblast machines—a catalog containing information on both open-top and closed-top pressure-type sandblast machines. Includes discussion of nozzles to be used in various operations; data tables on ratios of nozzle bore sizes to compressor capacities; and operator accessories. Also gives data on the new Sanstorm high-velocity blast nozzle. Catalog No. 594.

Write to the Sanstorm Mfg. Co., Dept. AC-2, Dept. C&E, P. O. Box 1173, Fresno, Calif., or use the Request Card at page 18. Circle No. 118.

Stake-out device—a fact sheet on the Minute Man Batterboard, a device designed to allow one man to stake out, quickly and easily, the dimensions of all building construction. According to the literature, the unit assures absolute accuracy. Text is illustrated with drawings and photographs.

Write to the Richey Mfg. Co., Dept. C&E, 2801 Rochester Road, Springfield, Ill., or use the Request Card at page 18. Circle No. 119.

Structural welding—a comprehensive 60-page manual for structural welding practice as applied to Saxe welded-connection units used for welded assembly. Very well illustrated with photographs, drawings, charts, and tables.

Write to Saxe Welded Connections, Dept. C&E, 1701 St. Paul St., Baltimore 2, Md., or use the Request Card at page 18. Circle No. 120.

Backripper—a folder discussing the operating techniques and savings made possible by backripping. Illustrates the principle of Preco backrippers and describes the application of backrippers in pioneering, ripping blacktop, land clearing, push-loading, and general construction work. Form No. DA-954.

Write to Preco Inc., Dept. C&E, 6300 E. Slauson Ave., Los Angeles 22, Calif., or use the Request Card at page 18. Circle No. 61.

Engine preventive maintenance—a brochure describing the Simplex oil-testing kit for use on gasoline, diesel, and gas engines. Text and photos show how tests are made to detect harmful contaminants in engine lubricating oils.

Write to Lengor, Inc., Dept. C&E, Towns-Worth Bldg., P. O. Box 126, Annapolis, Md., or use the Request Card at page 18. Circle No. 121.

Prestress forms—a general ca log covering the complete line Form-Crete steel forms for pres reinforced or prestressed Contains detailed and illustrat scription of each unit, and on-the photographs of typical applica

Write to the Food Machine Chemical Corp., Dept. C&E, P. O 1718, Lakeland, Fla., or use the quest Card at page 18. Circle No.

Crawler tractor—a brochure the Euclid Model C-6 crawler trac Well illustrated with photograph job applications, cutaways, sectio views, and drawings that explain power shift, Torqmatic drive, hydra lic track tensioning, and other de and operating features of the trac Condensed specifications and per formance charts. Form No. 601.

Write to the Euclid Div., Gener Motors Corp., Dept. C&E, 1361 Char don Road, Cleveland 17, Ohio, or u the Request Card at page 18. Circle No. 123.

Concrete testing machine—bulletin on Soiltest's Model CT-1 portable 250,000-pound-capacity con crete testing machine. Contains com plete specifications, as well as photo graphs and information on accesso equipment.

Write to Soiltest, Inc., Dept. C&E 4711 W. North Ave., Chicago 39, Ill., or use the Request Card at page 18. Circle No. 124.

Dragline buckets—a brochure de scribing the complete line of McCaf frey dragline buckets, including hea medium weight and new lightweight units. Photos demonstrate advantage of buckets in field operation. Detailed specification charts.

Write to M. P. McCaffrey, Inc., Dept. C&E, 2121 E. 25th St., Los An geles 58, Calif., or use the Reques Card at page 18. Circle No. 125.

Bridge concreting—literature telling how Pozzolith aided in th solution of special bridge concreting problems. Illustrated case-history re ports cover concreting of piers and bridge decks for highway and railroad bridges and include discussion of hot and cold-weather concreting; the use of lightweight concrete in bridge work; and placing and finishing pro lems encountered in bridge work. Bulletin MBR-P11.

Write to the Master Builders Co., Division of the American-Marietta Co., Dept. C&E, 7016 Euclid Ave., Cleveland 3, Ohio, or use the Request Card at page 18. Circle No. 126.

Utility crane—a folder on the Swedish-built Tico Model K35E hy draulic truck-mounted utility crane rated at a maximum capacity of 2,500 pounds. Describes and illustrates a variety of uses. Available attachments also illustrated.

Write to the Viking Sales Co., Dept. C&E, Kendall, Fla., or use the Re quest Card at page 18. Circle No. 127.

Void forms—literature describing Formavoid fiberboard void forms for lift-slab, poured-in-place, and pre-stressed, precast beam construction. Text illustrated with charts and photographs.

Write to the Container Corp. of America, Dept. C&E, 38 S. Dearborn St., Chicago 3, Ill., or use the Request Card at page 18. Circle No. 128.

Theodolite—literature describing and illustrating the Geo-Optic Model T-4 all-purpose optical repetition theodolite featuring an optical plum met built into the tripod. Includes specifications and a list of accessories.

Write to the Geo-Optic & Pages Corp., Dept. C&E, 149 Church St., New York 7, New York, or use the Re quest Card at page 18. Circle No. 129.

Electronic batch controls—a catalog describing Johnson electronic controls for accurate remote-control batching. Photographs and drawings illustrate text. Catalog No. KJ-685.

Write to the C. S. Johnson Co., Dept. C&E, P. O. Box 71, Champaign, Ill., or use the Request Card at page 18. Circle No. 6.

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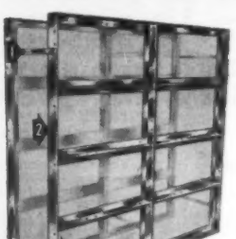
UNI-FORM PANELS ERECT INTO A TIGHT, RIGID, AUTOMATICALLY ACCURATE CONCRETE FORM



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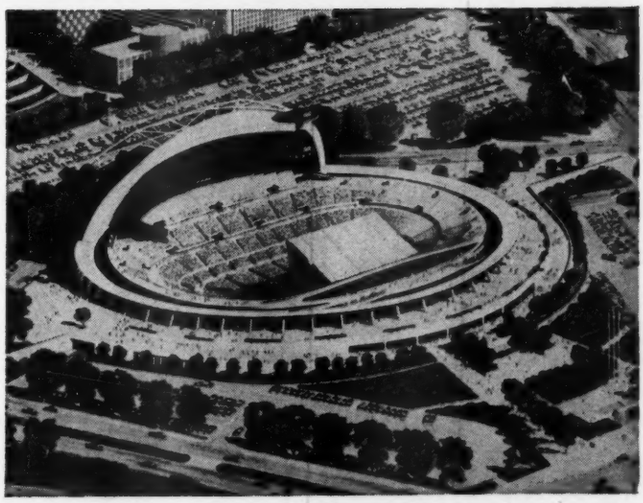
ADVANCE SCAFFOLD MAKES NEWS IN PITTSBURGH

The products of BEAVER-ADVANCE . . . tubular scaffold, accessories and material hoisting towers have been shaping new construction miracles throughout America. One such outstanding project presently nearing completion is the new Civic Auditorium at Pittsburgh, Pennsylvania. Here, thousands of ADVANCE Scaffold panels were engineered into a complex shoring system for construction of the concrete slab perimeter which supports the mammoth retractable roof of this huge amphitheater.

Of course, participation in modern construction miracles has become standard procedure for BEAVER-ADVANCE engineers and technicians. In fact, their efforts are continuously concentrated on the development of improved products and new methods of product application for better building. This has resulted in increased efficiencies and construction economies that are vital to our nation's future growth and prosperity. Architects, engineers and builders can be sure of top-flight construction every time . . . anywhere, when BEAVER-ADVANCE products are specified to do the job. They're for Rent and Sale throughout the United States by leading construction equipment distributors. Write for the name of the distributor nearest you.



Pittsburgh Civic Auditorium
Dick Corp., Large, Pa., Gen. Contr.
ADVANCE Shoring Scaffold by:
Linco Supply Co.
Pittsburgh, Pa.

BEAVER ADVANCE

Beaver-Advance
CORPORATION
Ellwood City,
Penna.

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GOING DOWN! NEW METHOD cuts man-hours in half

Demolition costs substantially reduced as small Michigan Tractor Shovels release usual hand crews for other work. Rigs start 12 stories up, work down.

By using three 16 cu ft Michigan Tractor Shovels, Drachman Demolition Co, Inc, New York, was able to cut normal man-hour requirements in half and finish salvage and demolition of two 12-story Park Avenue apartment buildings in slightly more than six months.

Job calls for new methods

The economics of the operation, and the time element, called for modern materials handling techniques where formerly handwork was employed. Officials of the firm selected three small Michigan Model 12B's and one competitive unit of similar dimensions.

Two Tractor Shovels started at the 12th floor of each 200′ x 80′ building. Demolition crews left several feet of exterior wall for the Tractor Shovels to work against as debris was dumped through floor openings.

Up to 1½ tons per Michigan load

Drachman Job Supt, Ed Brown, says, "The Michigans out-performed the other make by getting bigger loads faster." Their hydraulically operated 16 cu ft buckets with 3,000 pound lift capacities handled the broken bricks and concrete with ease.

Upon completion of cleanup on each floor, the Tractor Shovels were lowered to the floor below by simple chain block and falls. Crews then broke down the remaining wall and floor permitting it to fall to the floor below. Huge cranes removed the steelwork last.

Supt Brown says, "The Michigans' enabled us to more efficiently use our labor force. We needed only about one half the man-hours normally required for demolition work on a job this size."

Perhaps you need a Tractor Shovel with similar labor-saving abilities to work fast in restricted areas. There's the 16 cubic foot Model 12B and seven larger sizes up to 6 cubic yards.

Michigan is a registered trademark of

CLARK EQUIPMENT COMPANY
Construction Machinery Division

CLARK EQUIPMENT

2407 Pipestone Road
Benton Harbor 9, Michigan

In Canada:
Canadian Clark, Ltd.
St. Thomas, Ontario

For more facts, use Request Card at page 18 and circle No. 406